



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
H I	$1s-2p$	$2S-2P^o$	1215.6700	0	82259.164506	2	6	6.26E+08	4.16E-01
			1215.6736	0	[82258.920581]	2	2	6.27E+08	1.39E-01
			1215.6682	0	[82259.286468]	2	4	6.25E+08	2.77E-01
H I	$1s-3p$	$2S-2P^o$	1025.7222	0	97492.285237	2	6	1.67E+08	7.90E-02
			1025.7229	0	[97492.212963]	2	2	1.67E+08	2.63E-02
			1025.7218	0	[97492.321374]	2	4	1.67E+08	5.27E-02
H I	$1s-4p$	$2S-2P^o$	972.5367	0	102823.880910	2	6	6.82E+07	2.90E-02
			972.5370	0	[102823.850419]	2	2	6.82E+07	9.67E-03
			972.5366	0	[102823.896155]	2	4	6.81E+07	1.93E-02
H I	$1s-5p$	$2S-2P^o$	949.7430	0	105291.646159	2	6	3.43E+07	1.39E-02
			949.7431	0	[105291.630548]	2	2	3.44E+07	4.65E-03
			949.7429	0	[105291.653965]	2	4	3.44E+07	9.30E-03
H I	$1s-6p$	$2S-2P^o$	937.8034	0	106632.159471	2	6	1.97E+07	7.80E-03
			937.8035	0	[106632.150437]	2	2	1.97E+07	2.60E-03
			937.8033	0	[106632.163988]	2	4	1.97E+07	5.20E-03
H I	$1s-7p$	$2S-2P^o$	930.7482	0	107440.446112	2	6	1.24E+07	4.82E-03
			930.7482	0	[107440.448957]	2	4	1.24E+07	3.21E-03
			930.7482	0	[107440.440423]	2	2	1.23E+07	1.60E-03
H I	$1s-8p$	$2S-2P^o$	926.2256	0	107965.054900	2	6	8.27E+06	3.19E-03
			926.2257	0	[107965.051089]	2	2	8.24E+06	1.06E-03
			926.2256	0	[107965.056806]	2	4	8.24E+06	2.12E-03
H I	$1s-9p$	$2S-2P^o$	923.1503	0	108324.724769	2	6	5.79E+06	2.22E-03
			923.1503	0	[108324.726107]	2	4	5.79E+06	1.48E-03
			923.1503	0	[108324.722092]	2	2	5.78E+06	7.38E-04
H I	$1s-10p$	$2S-2P^o$	920.9630	0	108581.994396	2	6	4.19E+06	1.60E-03
			920.9630	0	[108581.995372]	2	4	4.21E+06	1.07E-03
			920.9630	0	[108581.992445]	2	2	4.21E+06	5.35E-04
He I	$1s^2-1s2p$	$1S-1P^o$	584.3340	0	171135.000	1	3	1.86E+09	2.85E-01
He I	$1s^2-1s3p$	$1S-1P^o$	537.0296	0	186209.471	1	3	5.80E+08	7.52E-02
He I	$1s^2-1s4p$	$1S-1P^o$	522.2128	0	191492.817	1	3	2.50E+08	3.07E-02
He I	$1s^2-1s5p$	$1S-1P^o$	515.6166	0	193942.57	1	3	1.29E+08	1.54E-02
He I	$1s^2-1s6p$	$1S-1P^o$	512.0982	0	195275.04	1	3	7.49E+07	8.83E-03
He I	$1s^2-1s7p$	$1S-1P^o$	509.9979	0	196079.24	1	3	4.73E+07	5.53E-03
He I	$1s^2-1s8p$	$1S-1P^o$	508.6431	0	196601.51	1	3	3.17E+07	3.69E-03
He I	$1s^2-1s9p$	$1S-1P^o$	507.7178	0	196959.79	1	3	2.23E+07	2.59E-03
He I	$1s^2-1s10p$	$1S-1P^o$	507.0576	0	197216.24	1	3	1.63E+07	1.88E-03
He II	$1s-2p$	$2S-2P^o$	303.7822	0	329183.2042	2	6	1.00E+10	4.16E-01
			303.7858	0	[329179.2994]	2	2	1.00E+10	1.39E-01
			303.7804	0	[329185.1566]	2	4	1.00E+10	2.77E-01
He II	$1s-3p$	$2S-2P^o$	256.3169	0	390141.9885	2	6	2.67E+09	7.90E-02
			256.3177	0	[390140.8316]	2	2	2.67E+09	2.63E-02
			256.3166	0	[390142.5670]	2	4	2.68E+09	5.27E-02
He II	$1s-4p$	$2S-2P^o$	243.0266	0	411477.6178	2	6	1.09E+09	2.90E-02
			243.0269	0	[411477.1297]	2	2	1.09E+09	9.67E-03
			243.0264	0	[411477.8619]	2	4	1.09E+09	1.93E-02
He II	$1s-5p$	$2S-2P^o$	237.3307	0	421352.9360	2	6	5.49E+08	1.39E-02
			237.3309	0	[421352.6861]	2	2	5.51E+08	4.65E-03
			237.3307	0	[421353.0609]	2	4	5.51E+08	9.30E-03

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Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
He II	1s–6p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	234.3472	0	426717.2880	2	6	3.16E+08	7.80E–03
			234.3473	0	[426717.1434]	2	2	3.16E+08	2.60E–03
			234.3472	0	[426717.3603]	2	4	3.16E+08	5.20E–03
He II	1s–7p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	232.5842	0	429951.8134	2	6	1.98E+08	4.82E–03
			232.5843	0	[429951.7224]	2	2	1.97E+08	1.60E–03
			232.5842	0	[429951.8590]	2	4	1.98E+08	3.21E–03
He II	1s–8p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	231.4541	0	432051.1395	2	6	1.32E+08	3.19E–03
			231.4541	0	[432051.1700]	2	4	1.32E+08	2.12E–03
			231.4541	0	[432051.0785]	2	2	1.32E+08	1.06E–03
He II	1s–9p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	230.6856	0	433490.4276	2	6	9.28E+07	2.22E–03
			230.6856	0	[433490.4490]	2	4	9.28E+07	1.48E–03
			230.6856	0	[433490.3847]	2	2	9.25E+07	7.38E–04
He II	1s–10p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	230.1390	0	434519.9400	2	6	6.72E+07	1.60E–03
			230.1391	0	[434519.9088]	2	2	6.74E+07	5.35E–04
			230.1390	0	[434519.9556]	2	4	6.74E+07	1.07E–03
Li I	1s <sup>2</sup> 2s–1s <sup>2</sup> 2p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	6709.6631	0	14903.878	2	6	3.69E+07	7.48E–01
			6709.7639	0	14903.654	2	2	3.69E+07	2.49E–01
			6709.6127	0	14903.990	2	4	3.70E+07	4.99E–01
Li I	1s <sup>2</sup> 2s–1s <sup>2</sup> 3p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	3233.5637	0	30925.632	2	6	1.02E+06	4.81E–03
			3233.5637	0	30925.632	2	4	1.02E+06	3.20E–03
			3233.5637	0	30925.632	2	2	1.03E+06	1.61E–03
Li I	1s <sup>2</sup> 2s–1s <sup>2</sup> 4p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	2741.995	0	36469.79	2	6	1.27E+06	4.31E–03
			2741.995	0	36469.79	2	4	1.28E+06	2.88E–03
			2741.995	0	36469.79	2	2	1.27E+06	1.43E–03
Li I	1s <sup>2</sup> 2s–1s <sup>2</sup> 5p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	2563.070	0	39015.71	2	6	8.73E+05	2.58E–03
			2563.070	0	39015.71	2	4	8.68E+05	1.71E–03
			2563.070	0	39015.71	2	2	8.72E+05	8.59E–04
Li I	1s <sup>2</sup> 2s–1s <sup>2</sup> 6p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	2475.780	0	40391.31	2	6	5.73E+05	1.58E–03
			2475.780	0	40391.31	2	4	5.71E+05	1.05E–03
			2475.780	0	40391.31	2	2	5.76E+05	5.29E–04
Li I	1s <sup>2</sup> 2s–1s <sup>2</sup> 7p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	2426.149	0	41217.58	2	6	3.85E+05	1.02E–03
			2426.149	0	41217.58	2	4	3.86E+05	6.82E–04
			2426.149	0	41217.58	2	2	3.86E+05	3.41E–04
Li II	1s <sup>2</sup> –1s2p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	199.2792	0	501808.59	1	3	2.59E+10	4.62E–01
Li II	1s <sup>2</sup> –1s3p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	178.0142	0	561752.82	1	3	7.86E+09	1.12E–01
Li II	1s <sup>2</sup> –1s4p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	171.5756	0	582833.3	1	3	3.32E+09	4.40E–02
Li II	1s <sup>2</sup> –1s5p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	168.7428	0	592618.0	1	3	1.70E+09	2.18E–02
Li II	1s <sup>2</sup> –1s6p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	167.2401	0	597942.6	1	3	9.94E+08	1.25E–02
Li II	1s <sup>2</sup> –1s7p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	166.346	0	601157	1	3	6.22E+08	7.74E–03
Li III	1s–2p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	134.9976	0	740754.123	2	6	5.08E+10	4.16E–01
			135.0012	0	[740734.350]	2	2	5.09E+10	1.39E–01
			134.9958	0	[740764.009]	2	4	5.07E+10	2.77E–01
Li III	1s–3p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	113.9049	0	877924.990	2	6	1.35E+10	7.90E–02
			113.9057	0	[877919.131]	2	2	1.35E+10	2.63E–02
			113.9046	0	[877927.919]	2	4	1.35E+10	5.27E–02
Li III	1s–4p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	107.9989	0	925935.071	2	6	5.53E+09	2.90E–02
			107.9992	0	[925932.599]	2	2	5.53E+09	9.67E–03
			107.9988	0	[925936.307]	2	4	5.52E+09	1.93E–02
Li III	1s–5p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	105.4678	0	948156.727	2	6	2.78E+09	1.39E–02
			105.4679	0	[948155.461]	2	2	2.79E+09	4.65E–03
			105.4677	0	[948157.359]	2	4	2.79E+09	9.30E–03

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Li III	1s–6p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	104.1420	0	960227.657	2	6	1.60E+09	7.80E–03
			104.1420	0	[960226.924]	2	2	1.60E+09	2.60E–03
			104.1419	0	[960228.023]	2	4	1.60E+09	5.20E–03
Li III	1s–7p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	103.3585	0	967505.998	2	6	1.00E+09	4.82E–03
			103.3586	0	[967505.536]	2	2	9.99E+08	1.60E–03
			103.3585	0	[967506.228]	2	4	1.00E+09	3.21E–03
Li III	1s–8p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	102.8563	0	972229.894	2	6	6.70E+08	3.19E–03
			102.8564	0	[972229.585]	2	2	6.68E+08	1.06E–03
			102.8563	0	[972230.049]	2	4	6.68E+08	2.12E–03
Li III	1s–9p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	102.5148	0	975468.567	2	6	4.70E+08	2.22E–03
			102.5149	0	[975468.350]	2	2	4.68E+08	7.38E–04
			102.5148	0	[975468.675]	2	4	4.70E+08	1.48E–03
Li III	1s–10p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	102.2720	0	977785.161	2	6	3.40E+08	1.60E–03
			102.2720	0	[977785.003]	2	2	3.41E+08	5.35E–04
			102.2719	0	[977785.240]	2	4	3.41E+08	1.07E–03
Be I	2s <sup>2</sup> –2s2p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	2349.329	0	42565.35	1	3	5.60E+08	1.39E+00
Be I	2s <sup>2</sup> –2s3p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	1661.478	0	60187.36	1	3	1.26E+07	1.56E–02
Be I	2s <sup>2</sup> –2s4p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	1491.765	0	67034.70	1	3	8.43E+02	8.44E–07
Be I	2s <sup>2</sup> –2s5p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	1426.117	0	70120.49	1	3	3.90E+05	3.57E–04
Be II	1s <sup>2</sup> 2s–1s <sup>2</sup> 2p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	3131.542	0	31933.15	2	6	1.14E+08	5.01E–01
			3131.973	0	31928.76	2	2	1.13E+08	1.66E–01
			3131.327	0	31935.34	2	4	1.13E+08	3.33E–01
Be II	1s <sup>2</sup> 2s–1s <sup>2</sup> 3p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	1036.3055	0	96496.64	2	6	1.71E+08	8.26E–02
			1036.3193	0	96495.36	2	2	1.71E+08	2.75E–02
			1036.2986	0	96497.28	2	4	1.71E+08	5.51E–02
Be II	1s <sup>2</sup> 2s–1s <sup>2</sup> 4p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	842.0269	0	118761.06	2	6	9.82E+07	3.13E–02
			842.0306	0	118760.53	2	2	9.78E+07	1.04E–02
			842.0250	0	118761.32	2	4	9.78E+07	2.08E–02
Be II	1s <sup>2</sup> 2s–1s <sup>2</sup> 5p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	775.3621	0	128972.00	2	6	5.47E+07	1.48E–02
			775.3621	0	128972.00	2	4	5.50E+07	9.92E–03
			775.3621	0	128972.00	2	2	5.50E+07	4.96E–03
Be II	1s <sup>2</sup> 2s–1s <sup>2</sup> 6p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	743.5740	0	134485.6	2	6	3.30E+07	8.21E–03
			743.5740	0	134485.6	2	4	3.31E+07	5.48E–03
			743.5740	0	134485.6	2	2	3.29E+07	2.73E–03
Be II	1s <sup>2</sup> 2s–1s <sup>2</sup> 7p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	725.710	0	137796	2	6	2.14E+07	5.06E–03
			725.710	0	137796	2	4	2.14E+07	3.38E–03
			725.710	0	137796	2	2	2.13E+07	1.68E–03
Be III	1s <sup>2</sup> –1s2p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	100.2552	0	997454	1	3	1.23E+11	5.55E–01
Be III	1s <sup>2</sup> –1s3p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	88.3088	0	1132390	1	3	3.62E+10	1.27E–01
Be III	1s <sup>2</sup> –1s4p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	84.7580	0	1179830	1	3	1.53E+10	4.93E–02
Be III	1s <sup>2</sup> –1s5p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	83.2020	0	1201894	1	3	7.80E+09	2.43E–02
Be III	1s <sup>2</sup> –1s6p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	82.3770	0	1213931	1	3	4.49E+09	1.37E–02
Be III	1s <sup>2</sup> –1s7p	<sup>1</sup> S– <sup>1</sup> P <sup>o</sup>	81.8910	0	1221135	1	3	2.84E+09	8.57E–03
Be IV	1s–2p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	75.9277	0	1317041.756	2	6	1.60E+11	4.16E–01
			75.9313	0	[1316979.250]	2	2	1.61E+11	1.39E–01
			75.9259	0	[1317073.008]	2	4	1.60E+11	2.77E–01
Be IV	1s–3p	<sup>2</sup> S– <sup>2</sup> P <sup>o</sup>	64.0648	0	1560919.059	2	6	4.28E+10	7.90E–02
			64.0656	0	[1560900.538]	2	2	4.27E+10	2.63E–02
			64.0644	0	[1560928.319]	2	4	4.28E+10	5.27E–02

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Be IV	$1s-4p$	$^2S-^2P^o$	60.7431	0	1646276.991	2	6	1.75E+10	2.90E-02
			60.7434	0	[1646269.178]	2	2	1.75E+10	9.67E-03
			60.7430	0	[1646280.898]	2	4	1.74E+10	1.93E-02
Be IV	$1s-5p$	$^2S-^2P^o$	59.3195	0	1685785.035	2	6	8.78E+09	1.39E-02
			59.3197	0	[1685781.035]	2	2	8.81E+09	4.65E-03
			59.3195	0	[1685787.036]	2	4	8.81E+09	9.30E-03
Be IV	$1s-6p$	$^2S-^2P^o$	58.5739	0	1707245.902	2	6	5.05E+09	7.80E-03
			58.5739	0	[1707243.587]	2	2	5.05E+09	2.60E-03
			58.5738	0	[1707247.060]	2	4	5.05E+09	5.20E-03
Be IV	$1s-7p$	$^2S-^2P^o$	58.1332	0	1720185.973	2	6	3.17E+09	4.82E-03
			58.1333	0	[1720184.515]	2	2	3.16E+09	1.60E-03
			58.1332	0	[1720186.702]	2	4	3.17E+09	3.21E-03
Be IV	$1s-8p$	$^2S-^2P^o$	57.8508	0	1728584.492	2	6	2.12E+09	3.19E-03
			57.8508	0	[1728584.980]	2	4	2.11E+09	2.12E-03
			57.8508	0	[1728583.515]	2	2	2.11E+09	1.06E-03
Be IV	$1s-9p$	$^2S-^2P^o$	57.6587	0	1734342.440	2	6	1.48E+09	2.22E-03
			57.6588	0	[1734341.754]	2	2	1.48E+09	7.38E-04
			57.6587	0	[1734342.783]	2	4	1.48E+09	1.48E-03
Be IV	$1s-10p$	$^2S-^2P^o$	57.5221	0	1738461.037	2	6	1.08E+09	1.60E-03
			57.5222	0	[1738460.537]	2	2	1.08E+09	5.35E-04
			57.5221	0	[1738461.287]	2	4	1.08E+09	1.07E-03
B I	$2s^22p-2s^23s$	$^2P^o-^2S$	2498.1588	10.169	40039.650	6	2	2.59E+08	8.07E-02
			2498.4762	15.254	40039.650	4	2	1.72E+08	8.07E-02
			2497.5243	0	40039.650	2	2	8.64E+07	8.08E-02
B I	$2s^22p-2s^2p^2$	$^2P^o-^2D$	2089.997	10.169	47857.12	6	10	3.22E+07	3.51E-02
			2090.228	15.254	47856.93	4	4	5.36E+06	3.51E-03
			2090.214	15.254	47857.24	4	6	3.21E+07	3.15E-02
			2089.562	0	47856.93	2	4	2.68E+07	3.51E-02
B I	$2s^22p-2s^23d$	$^2P^o-^2D$	1826.2316	10.169	54767.736	6	10	2.10E+08	1.75E-01
			1826.4047	15.254	54767.633	4	4	3.50E+07	1.75E-02
			1826.3990	15.254	54767.804	4	6	2.11E+08	1.58E-01
			1825.8960	0	54767.633	2	4	1.75E+08	1.75E-01
B I	$2s^22p-2s^24s$	$^2P^o-^2S$	1818.1814	10.169	55010.181	6	2	9.44E+07	1.56E-02
			1818.3495	15.254	55010.181	4	2	6.29E+07	1.56E-02
			1817.8453	0	55010.181	2	2	3.15E+07	1.56E-02
B I	$2s^22p-2s^24d$	$^2P^o-^2D$	1667.132	10.169	59993.43	6	10	1.05E+08	7.31E-02
			1667.273	15.254	59993.43	4	6	1.05E+08	6.58E-02
			1667.273	15.254	59993.43	4	4	1.75E+07	7.31E-03
			1666.849	0	59993.43	2	4	8.79E+07	7.32E-02
B I	$2s^22p-2s^25s$	$^2P^o-^2S$	1662.890	10.169	60146.45	6	2	6.00E+07	8.29E-03
			1663.030	15.254	60146.45	4	2	4.00E+07	8.29E-03
			1662.609	0	60146.45	2	2	2.00E+07	8.29E-03
B I	$2s^22p-2s^26s$	$^2P^o-^2S$	1600.716	10.169	62482.23	6	2	5.27E+07	6.75E-03
			1600.846	15.254	62482.23	4	2	3.51E+07	6.75E-03
			1600.455	0	62482.23	2	2	1.76E+07	6.75E-03
B I	$2s^22p-2s^25d$	$^2P^o-^2D$	1600.633	10.169	62485.47	6	10	5.67E+07	3.63E-02
			1600.763	15.254	62485.47	4	6	5.67E+07	3.27E-02
			1600.763	15.254	62485.47	4	4	9.45E+06	3.63E-03
			1600.372	0	62485.47	2	4	4.73E+07	3.63E-02
B I	$2s^22p-2s^27s^*$	$^2P^o-^2S$	1573.552	10.169	63560.64	6	2	5.89E+07	7.29E-03
			1573.678	15.254	63560.64	4	2	3.93E+07	7.29E-03
			1573.301	0	63560.64	2	2	1.96E+07	7.29E-03
B I	$2s^22p-2s^26d$	$^2P^o-^2D$	1566.536	10.169	63845.29	6	10	3.36E+07	2.06E-02
			1566.661	15.254	63845.29	4	6	3.35E+07	1.85E-02
			1566.661	15.254	63845.29	4	4	5.60E+06	2.06E-03
			1566.286	0	63845.29	2	4	2.80E+07	2.06E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
B I	$2s^2 2p-2s^2 8s^*$	$^2P^o-^2S$	1558.948	10.169	64156.00	6	2	8.17E+07	9.92E-03
			1559.071	15.254	64156.00	4	2	5.44E+07	9.92E-03
			1558.701	0	64156.00	2	2	2.72E+07	9.92E-03
B I	$2s^2 2p-2s^2 7d$	$^2P^o-^2D$	1546.667	10.169	64665.32	6	10	2.14E+07	1.28E-02
			1546.789	15.254	64665.32	4	6	2.12E+07	1.14E-02
			1546.789	15.254	64665.32	4	4	3.57E+06	1.28E-03
			1546.424	0	64665.32	2	4	1.79E+07	1.28E-02
B I	$2s^2 2p-2s^2 9s^*$	$^2P^o-^2S$	1543.641	10.169	64792.07	6	2	1.26E+08	1.50E-02
			1543.762	15.254	64792.07	4	2	8.40E+07	1.50E-02
			1543.399	0	64792.07	2	2	4.20E+07	1.50E-02
B I	$2s^2 2p-2s^2 8d$	$^2P^o-^2D$	1534.045	10.169	65197.32	6	10	1.44E+07	8.46E-03
			1534.164	15.254	65197.32	4	6	1.44E+07	7.62E-03
			1534.164	15.254	65197.32	4	4	2.40E+06	8.46E-04
			1533.805	0	65197.32	2	4	1.20E+07	8.46E-03
B I	$2s^2 2p-2s^2 p^2^*$	$^2P^o-^2S$	1532.332	10.169	65270.16	6	2	1.44E+08	1.69E-02
			1532.452	15.254	65270.16	4	2	9.60E+07	1.69E-02
			1532.094	0	65270.16	2	2	4.80E+07	1.69E-02
B I	$2s^2 2p-2s^2 9d$	$^2P^o-^2D$	1525.519	10.169	65561.64	6	10	1.01E+07	5.89E-03
			1525.637	15.254	65561.64	4	6	1.01E+07	5.31E-03
			1525.637	15.254	65561.64	4	4	1.69E+06	5.89E-04
			1525.282	0	65561.64	2	4	8.46E+06	5.90E-03
B I	$2s^2 2p-2s^2 10s^*$	$^2P^o-^2S$	1524.409	10.169	65609.35	6	2	8.78E+07	1.02E-02
			1524.527	15.254	65609.35	4	2	5.85E+07	1.02E-02
			1524.173	0	65609.35	2	2	2.93E+07	1.02E-02
B I	$2s^2 2p-2s^2 10d$	$^2P^o-^2D$	1519.481	10.169	65822.12	6	10	7.40E+06	4.27E-03
			1519.598	15.254	65822.12	4	6	7.41E+06	3.85E-03
			1519.598	15.254	65822.12	4	4	1.23E+06	4.27E-04
			1519.246	0	65822.12	2	4	6.17E+06	4.27E-03
B I	$2s^2 2p-2s^2 p^2$	$^2P^o-^2P$	1378.921	10.169	72530.64	6	6	2.05E+09	5.85E-01
			1379.165	15.254	72522.87	4	2	6.83E+08	9.74E-02
			1378.944	15.254	72534.52	4	4	1.71E+09	4.88E-01
			1378.875	0	72522.87	2	2	1.37E+09	3.90E-01
			1378.654	0	72534.52	2	4	3.42E+08	1.95E-01
B I	$2s^2 2p-2s^2 p(^3P^o)3p$	$^2P^o-^2P$	1151.37	10.169	86863.1	6	6	2.93E+08	5.82E-02
			1151.49	15.254	86859.6	4	2	9.76E+07	9.70E-03
			1151.42	15.254	86864.9	4	4	2.44E+08	4.85E-02
			1151.28	0	86859.6	2	2	1.95E+08	3.88E-02
			1151.21	0	86864.9	2	4	4.88E+07	1.94E-02
B I	$2s^2 2p-2s^2 p(^3P^o)4p$	$^2P^o-^2P$	1047.779	10.169	95450.1	6	6	2.11E+07	3.47E-03
			1047.865	15.254	95447.4	4	2	7.02E+06	5.78E-04
			1047.820	15.254	95451.5	4	4	1.76E+07	2.89E-03
			1047.697	0	95447.4	2	2	1.40E+07	2.31E-03
			1047.652	0	95451.5	2	4	3.49E+06	1.15E-03
B I	$2s^2 2p-2s^2 p(^3P^o)5p$	$^2P^o-^2P$	1011.007	10.169	98921.5	6	6	3.25E+06	4.98E-04
			1011.058	15.254	98921.5	4	4	2.71E+06	4.15E-04
			1010.903	0	98921.5	2	4	5.42E+05	1.66E-04
				0		2	2	2.15E+06	3.29E-04
				15.254		4	2	1.07E+06	8.22E-05
B I	$2s^2 2p-2s^2 p(^3P^o)6p$	$^2P^o-^2P$	993.329	10.169	100681.7	6	6	8.25E+05	1.22E-04
			993.380	15.254	100681.7	4	4	6.89E+05	1.02E-04
			993.229	0	100681.7	2	4	1.38E+05	4.08E-05
				0		2	2	5.47E+05	8.09E-05
				15.254		4	2	2.73E+05	2.02E-05
B II	$2s^2-2s2p$	$^1S-^1P^o$	1362.461	0	73396.60	1	3	1.21E+09	1.01E+00
B II	$2s^2-2s3p$	$^1S-^1P^o$	693.9473	0	144103.17	1	3	4.58E+08	9.93E-02
B II	$2s^2-2s4p$	$^1S-^1P^o$	586.1955	0	170591.55	1	3	3.33E+08	5.14E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
B II	$2s^2-2s5p$	$^1S-^1P^o$	547.5408	0	182634.78	1	3	1.79E+08	2.42E-02
B III	$1s^22s-1s^22p$	$^2S-^2P^o$	2066.921	0	48381.13	2	6	1.89E+08	3.64E-01
			2067.893	0	48358.40	2	2	1.89E+08	1.21E-01
			2066.436	0	48392.50	2	4	1.90E+08	2.43E-01
B III	$1s^22s-1s^23p$	$^2S-^2P^o$	518.2473	0	192958.08	2	6	1.27E+09	1.53E-01
			518.2652	0	192951.40	2	2	1.27E+09	5.11E-02
			518.2383	0	192961.42	2	4	1.27E+09	1.02E-01
B III	$1s^22s-1s^24p$	$^2S-^2P^o$	411.8067	0	242832.41	2	6	6.53E+08	4.98E-02
			411.8113	0	242829.66	2	2	6.53E+08	1.66E-02
			411.8043	0	242833.78	2	4	6.51E+08	3.31E-02
B III	$1s^22s-1s^25p$	$^2S-^2P^o$	376.3315	0	265723.18	2	6	3.53E+08	2.25E-02
			376.3335	0	265721.77	2	2	3.54E+08	7.51E-03
			376.3305	0	265723.88	2	4	3.53E+08	1.50E-02
B IV	$1s^2-1s2p$	$^1S-^1P^o$	60.3145	0	1657980	1	3	3.73E+11	6.11E-01
B IV	$1s^2-1s3p$	$^1S-^1P^o$	52.6807	0	1898230	1	3	1.08E+11	1.35E-01
B IV	$1s^2-1s4p$	$^1S-^1P^o$	50.4347	0	1982760	1	3	4.55E+10	5.21E-02
B IV	$1s^2-1s5p$	$^1S-^1P^o$	49.4549	0	2022040	1	3	2.33E+10	2.56E-02
B V	$1s-2p$	$^2S-^2P^o$	48.5873	0	2058150.68	2	6	3.92E+11	4.16E-01
			48.5909	0	[2057998.04]	2	2	3.93E+11	1.39E-01
			48.5855	0	[2058227.01]	2	4	3.91E+11	2.77E-01
B V	$1s-3p$	$^2S-^2P^o$	40.9964	0	2439240.83	2	6	1.05E+11	7.90E-02
			40.9971	0	[2439195.60]	2	2	1.04E+11	2.63E-02
			40.9960	0	[2439263.44]	2	4	1.05E+11	5.27E-02
B V	$1s-4p$	$^2S-^2P^o$	38.8708	0	2572624.52	2	6	4.27E+10	2.90E-02
			38.8711	0	[2572605.44]	2	2	4.27E+10	9.67E-03
			38.8707	0	[2572634.06]	2	4	4.26E+10	1.93E-02
B V	$1s-5p$	$^2S-^2P^o$	37.9599	0	2634360.93	2	6	2.14E+10	1.39E-02
			37.9600	0	[2634351.16]	2	2	2.15E+10	4.65E-03
			37.9598	0	[2634365.81]	2	4	2.15E+10	9.30E-03
B V	$1s-6p$	$^2S-^2P^o$	37.4827	0	2667896.04	2	6	1.23E+10	7.80E-03
			37.4828	0	[2667890.39]	2	2	1.23E+10	2.60E-03
			37.4827	0	[2667898.87]	2	4	1.23E+10	5.20E-03
B V	$1s-7p$	$^2S-^2P^o$	37.2008	0	2688116.28	2	6	7.74E+09	4.82E-03
			37.2008	0	[2688112.72]	2	2	7.71E+09	1.60E-03
			37.2007	0	[2688118.06]	2	4	7.74E+09	3.21E-03
B V	$1s-8p$	$^2S-^2P^o$	37.0200	0	2701239.78	2	6	5.18E+09	3.19E-03
			37.0201	0	[2701237.40]	2	2	5.16E+09	1.06E-03
			37.0200	0	[2701240.97]	2	4	5.16E+09	2.12E-03
B V	$1s-9p$	$^2S-^2P^o$	36.8971	0	2710237.09	2	6	3.63E+09	2.22E-03
			36.8972	0	[2710235.42]	2	2	3.62E+09	7.38E-04
			36.8971	0	[2710237.93]	2	4	3.63E+09	1.48E-03
B V	$1s-10p$	$^2S-^2P^o$	36.8097	0	2716672.75	2	6	2.63E+09	1.60E-03
			36.8098	0	[2716671.53]	2	2	2.63E+09	5.35E-04
			36.8097	0	[2716673.36]	2	4	2.63E+09	1.07E-03
C I	$2s^22p^2-2s^22p3s$	$^3P-^3P^o$	1657.181	29.58	60373.00	9	9	3.59E+08	1.48E-01
			1658.121	43.40	60352.63	5	3	1.49E+08	3.69E-02
			1657.907	16.40	60333.43	3	1	3.59E+08	4.93E-02
			1657.379	16.40	60352.63	3	3	8.96E+07	3.69E-02
			1657.008	43.40	60393.14	5	5	2.70E+08	1.11E-01
			1656.929	0	60352.63	1	3	1.20E+08	1.48E-01
			1656.267	16.40	60393.14	3	5	8.99E+07	6.16E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
C I	$2s^2 2p^2 - 2s 2p^3$	$^3P - ^3D^o$	1561.054	29.58	64088.85	9	15	1.17E+08	7.14E-02
			1561.438	43.40	64086.92	5	7	1.17E+08	6.00E-02
			1561.367	43.40	64089.85	5	3	3.26E+06	7.15E-04
			1561.340	43.40	64090.95	5	5	2.93E+07	1.07E-02
			1560.709	16.40	64089.85	3	3	4.90E+07	1.79E-02
			1560.682	16.40	64090.95	3	5	8.81E+07	5.36E-02
			1560.309	0	64089.85	1	3	6.52E+07	7.14E-02
C I	$2s^2 2p^2 - 2s 2p^3$	$^3P - ^3P^o$	1329.339	29.58	75254.93	9	9	2.30E+08	6.09E-02
			1329.600	43.40	75253.97	5	3	9.56E+07	1.52E-02
			1329.577	43.40	75255.27	5	5	1.72E+08	4.57E-02
			1329.123	16.40	75253.97	3	3	5.74E+07	1.52E-02
			1329.100	16.40	75255.27	3	5	5.75E+07	2.54E-02
			1329.085	16.40	75256.12	3	1	2.30E+08	2.03E-02
			1328.834	0	75253.97	1	3	7.66E+07	6.08E-02
C I	$2s^2 2p^2 - 2s^2 2p 4s$	$^3P - ^3P^o$	1280.356	29.58	78132.85	9	9	8.63E+07	2.12E-02
			1280.847	43.40	78116.74	5	3	3.58E+07	5.29E-03
			1280.597	16.40	78104.98	3	1	8.60E+07	7.05E-03
			1280.404	16.40	78116.74	3	3	2.15E+07	5.29E-03
			1280.333	43.40	78148.09	5	5	6.47E+07	1.59E-02
			1280.135	0	78116.74	1	3	2.88E+07	2.12E-02
			1279.890	16.40	78148.09	3	5	2.15E+07	8.82E-03
C I	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3D^o$	1277.463	29.58	78309.76	9	15	2.62E+08	1.07E-01
			1277.954	43.40	78293.49	5	3	7.28E+06	1.07E-03
			1277.723	43.40	78307.63	5	5	6.58E+07	1.61E-02
			1277.550	43.40	78318.25	5	7	2.63E+08	9.00E-02
			1277.513	16.40	78293.49	3	3	1.09E+08	2.67E-02
			1277.282	16.40	78307.63	3	5	1.97E+08	8.03E-02
			1277.245	0	78293.49	1	3	1.46E+08	1.07E-01
C I	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3P^o$	1261.268	29.58	79314.86	9	9	1.62E+08	3.87E-02
			1261.552	43.40	79310.85	5	5	1.22E+08	2.90E-02
			1261.426	43.40	79318.78	5	3	6.76E+07	9.67E-03
			1261.122	16.40	79310.85	3	5	4.05E+07	1.61E-02
			1260.996	16.40	79318.78	3	3	4.06E+07	9.67E-03
			1260.927	16.40	79323.16	3	1	1.62E+08	1.29E-02
			1260.735	0	79318.78	1	3	5.41E+07	3.87E-02
C I	$2s^2 2p^2 - 2s^2 2p 5s$	$^3P - ^3P^o$	1194.131	29.58	83772.50	9	9	4.91E+07	1.05E-02
			1194.615	43.40	83752.41	5	3	2.06E+07	2.64E-03
			1194.406	16.40	83740.06	3	1	4.92E+07	3.51E-03
			1194.229	16.40	83752.41	3	3	1.23E+07	2.64E-03
			1194.063	43.40	83791.04	5	5	3.70E+07	7.91E-03
			1193.995	0	83752.41	1	3	1.64E+07	1.05E-02
			1193.679	16.40	83791.04	3	5	1.24E+07	4.40E-03
C I	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3D^o$	1193.176	29.58	83839.51	9	15	1.34E+08	4.75E-02
			1193.649	43.40	83820.13	5	3	3.71E+06	4.75E-04
			1193.393	43.40	83838.08	5	5	3.34E+07	7.13E-03
			1193.264	16.40	83820.13	3	3	5.57E+07	1.19E-02
			1193.240	43.40	83848.83	5	7	1.34E+08	3.99E-02
			1193.031	0	83820.13	1	3	7.44E+07	4.76E-02
			1193.009	16.40	83838.08	3	5	1.00E+08	3.56E-02
C I	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3P^o$	1189.345	29.58	84109.44	9	9	6.08E+07	1.29E-02
			1189.631	43.40	84103.10	5	5	4.57E+07	9.69E-03
			1189.447	43.40	84116.09	5	3	2.54E+07	3.23E-03
			1189.249	16.40	84103.10	3	5	1.52E+07	5.38E-03
			1189.065	16.40	84116.09	3	3	1.52E+07	3.23E-03
			1188.992	16.40	84121.22	3	1	6.10E+07	4.31E-03
			1188.833	0	84116.09	1	3	2.03E+07	1.29E-02
C I	$2s^2 2p^2 - 2s^2 2p 6s$	$^3P - ^3P^o$	1158.452	29.58	86351.65	9	9	2.77E+07	5.57E-03
			1158.907	43.40	86331.63	5	3	1.16E+07	1.40E-03
			1158.674	16.40	86321.94	3	1	2.77E+07	1.86E-03
			1158.544	16.40	86331.63	3	3	6.91E+06	1.39E-03
			1158.397	43.40	86369.60	5	5	2.08E+07	4.18E-03
			1158.324	0	86331.63	1	3	9.23E+06	5.57E-03
			1158.035	16.40	86369.60	3	5	6.95E+06	2.33E-03



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm $^{-1}$	$E_k$ , cm $^{-1}$	$g_i$	$g_k$	$A_{ki}$ , s $^{-1}$	$f_{ik}$
C I	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3D^o$	1157.965	29.58	86387.94	9	15	7.28E+07	2.44E-02
			1158.492	43.40	86362.52	5	3	2.02E+06	2.44E-04
			1158.132	43.40	86389.38	5	5	1.82E+07	3.66E-03
			1158.130	16.40	86362.52	3	3	3.03E+07	6.10E-03
			1158.019	43.40	86397.80	5	7	7.28E+07	2.05E-02
			1157.910	0	86362.52	1	3	4.05E+07	2.44E-02
			1157.769	16.40	86389.38	3	5	5.46E+07	1.83E-02
C I	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3P^o$	1156.294	29.58	86512.79	9	9	3.02E+07	6.05E-03
			1156.560	43.40	86506.70	5	5	2.26E+07	4.53E-03
			1156.389	43.40	86519.47	5	3	1.26E+07	1.51E-03
			1156.199	16.40	86506.70	3	5	7.54E+06	2.52E-03
			1156.028	16.40	86519.47	3	3	7.59E+06	1.52E-03
			1155.979	16.40	86523.16	3	1	3.01E+07	2.01E-03
			1155.809	0	86519.47	1	3	1.01E+07	6.05E-03
C I	$2s^2 2p^2 - 2s^2 2p7s$	$^3P - ^3P^o$	1140.150	29.58	87737.30	9	9	1.68E+07	3.28E-03
			1140.574	43.40	87718.56	5	3	7.00E+06	8.19E-04
			1140.316	16.40	87711.37	3	1	1.68E+07	1.09E-03
			1140.223	16.40	87718.56	3	3	4.21E+06	8.20E-04
			1140.117	43.40	87753.73	5	5	1.26E+07	2.46E-03
			1140.010	0	87718.56	1	3	5.61E+06	3.28E-03
			1139.766	16.40	87753.73	3	5	4.22E+06	1.37E-03
C I	$2s^2 2p^2 - 2s^2 2p6d$	$^3P - ^3D^o$	1139.76	29.58	87767.4	9	15	4.34E+07	1.41E-02
			1140.36	43.40	[87735.3]	5	3	1.21E+06	1.41E-04
			1140.01	16.40	[87735.3]	3	3	1.81E+07	3.53E-03
			1139.865	43.40	87773.09	5	5	1.09E+07	2.12E-03
			1139.812	43.40	87777.17	5	7	4.33E+07	1.18E-02
			1139.79	0	[87735.3]	1	3	2.41E+07	1.41E-02
			1139.514	16.40	87773.09	3	5	3.27E+07	1.06E-02
C I	$2s^2 2p^2 - 2s^2 2p6d$	$^3P - ^3P^o$	1138.844	29.58	87837.93	9	9	1.72E+07	3.34E-03
			1139.093	43.40	87832.54	5	5	1.29E+07	2.51E-03
			1138.946	43.40	87843.91	5	3	7.17E+06	8.37E-04
			1138.743	16.40	87832.54	3	5	4.32E+06	1.40E-03
			1138.595	16.40	87843.91	3	3	4.31E+06	8.37E-04
			1138.557	16.40	[87846.9]	3	1	1.71E+07	1.11E-03
			1138.383	0	87843.91	1	3	5.73E+06	3.34E-03
C I	$2s^2 2p^2 - 2s^2 2p8s$	$^3P - ^3P^o$	1129.4528	29.58	88568.03	9	9	1.09E+07	2.08E-03
			1129.8712	43.40	88549.06	5	3	4.54E+06	5.21E-04
			1129.5943	16.40	88543.76	3	1	1.09E+07	6.95E-04
			1129.5267	16.40	88549.06	3	3	2.72E+06	5.21E-04
			1129.4221	43.40	88584.26	5	5	8.16E+06	1.56E-03
			1129.3175	0	88549.06	1	3	3.63E+06	2.08E-03
			1129.0777	16.40	88584.26	3	5	2.73E+06	8.69E-04
C I	$2s^2 2p^2 - 2s^2 2p7d$	$^3P - ^3D^o$	1129.090	29.58	88596.5	9	15	2.77E+07	8.82E-03
			1129.749	43.40	[88558.6]	5	3	7.67E+05	8.81E-05
			1129.405	16.40	[88558.6]	3	3	1.16E+07	2.21E-03
			1129.196	0	[88558.6]	1	3	1.54E+07	8.82E-03
			1129.1607	43.40	88604.75	5	5	6.91E+06	1.32E-03
			1129.135	43.40	[88606.8]	5	7	2.77E+07	7.41E-03
			1128.8166	16.40	88604.75	3	5	2.08E+07	6.62E-03
C I	$2s^2 2p^2 - 2s^2 2p7d$	$^3P - ^3P^o$	1128.517	29.58	88641.4	9	9	1.07E+07	2.04E-03
			1128.752	43.40	[88636.8]	5	5	8.01E+06	1.53E-03
			1128.627	43.40	[88646.6]	5	3	4.45E+06	5.10E-04
			1128.408	16.40	[88636.8]	3	5	2.67E+06	8.50E-04
			1128.284	16.40	[88646.6]	3	3	2.67E+06	5.10E-04
			1128.252	16.40	[88649.1]	3	1	1.07E+07	6.80E-04
			1128.075	0	[88646.6]	1	3	3.56E+06	2.04E-03
C I	$2s^2 2p^2 - 2s^2 2p9s$	$^3P - ^3P^o$	1122.9030	29.58	89084.46	9	9	7.41E+06	1.40E-03
			1123.0654	43.40	89085.41	5	3	3.08E+06	3.50E-04
			1122.7727	16.40	89081.62	3	1	7.41E+06	4.67E-04
			1122.7250	16.40	89085.41	3	3	1.85E+06	3.50E-04
			1122.5183	0	89085.41	1	3	2.47E+06	1.40E-03
				43.40		5	5	5.71E+06	1.08E-03
				16.40		3	5	1.89E+06	5.97E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
C I	$2s^2 2p^2 - 2s^2 2p8d$	$^3P - ^3D^o$	1122.292	29.58	89132.9	9	15	1.87E+07	5.88E-03
			1122.994	43.40	[89091.1]	5	3	5.18E+05	5.88E-05
			1122.653	16.40	[89091.1]	3	3	7.83E+06	1.48E-03
			1122.447	0	[89091.1]	1	3	1.04E+07	5.88E-03
			1122.3438	43.40	89142.66	5	5	4.68E+06	8.83E-04
			1122.328	43.40	[89143.9]	5	7	1.87E+07	4.95E-03
			1122.0038	16.40	89142.66	3	5	1.41E+07	4.42E-03
C I	$2s^2 2p^2 - 2s^2 2p8d$	$^3P - ^3P^o$	1121.878	29.58	89165.8	9	9	7.15E+06	1.35E-03
			1122.098	43.40	[89162.2]	5	5	5.35E+06	1.01E-03
			1121.999	43.40	[89170.0]	5	3	2.97E+06	3.36E-04
			1121.758	16.40	[89162.2]	3	5	1.78E+06	5.61E-04
			1121.660	16.40	[89170.0]	3	3	1.78E+06	3.36E-04
			1121.641	16.40	[89171.5]	3	1	7.14E+06	4.49E-04
			1121.453	0	[89170.0]	1	3	2.39E+06	1.35E-03
C I	$2s^2 2p^2 - 2s^2 2p10s$	$^3P - ^3P^o$	1118.2900	29.58	89451.82	9	9	5.26E+06	9.87E-04
			1118.4629	43.40	89451.82	5	3	2.19E+06	2.47E-04
			1118.1252	16.40	89451.82	3	3	1.32E+06	2.47E-04
			1117.9202	0	89451.82	1	3	1.76E+06	9.87E-04
				43.40		5	5	4.05E+06	7.60E-04
				16.40		3	5	1.35E+06	4.22E-04
				16.40		3	1	5.41E+06	3.38E-04
C I	$2s^2 2p^2 - 2s^2 2p9d$	$^3P - ^3D^o$	1117.690	29.58	89499.8	9	15	1.32E+07	4.13E-03
			1118.408	43.40	[89456.2]	5	3	3.66E+05	4.12E-05
			1118.070	16.40	[89456.2]	3	3	5.55E+06	1.04E-03
			1117.866	0	[89456.2]	1	3	7.35E+06	4.13E-03
			1117.730	43.40	89510.43	5	5	3.30E+06	6.19E-04
			1117.724	43.40	[89510.9]	5	7	1.32E+07	3.47E-03
			1117.393	16.40	89510.43	3	5	9.94E+06	3.10E-03
C I	$2s^2 2p^2 - 2s^2 2p9d$	$^3P - ^3P^o$	1117.408	29.58	89522.4	9	9	4.97E+06	9.30E-04
			1117.581	43.40	[89522.4]	5	5	3.72E+06	6.97E-04
			1117.244	16.40	[89522.4]	3	5	1.24E+06	3.87E-04
				16.40		3	3	1.27E+06	2.38E-04
				43.40		5	3	2.12E+06	2.38E-04
				16.40		3	1	5.08E+06	3.17E-04
				0		1	3	1.69E+06	9.51E-04
C I	$2s^2 2p^2 - 2s^2 2p10d$	$^3P - ^3D^o$	1114.43	29.58	89762	9	15	9.67E+06	3.00E-03
			1115.17	43.40	[89716]	5	3	2.68E+05	3.00E-05
			1114.83	16.40	[89716]	3	3	4.03E+06	7.50E-04
			1114.63	0	[89716]	1	3	5.37E+06	3.00E-03
			1114.4611	43.40	89772.87	5	5	2.42E+06	4.50E-04
			1114.457	43.40	[89773.2]	5	7	9.67E+06	2.52E-03
			1114.1258	16.40	89772.87	3	5	7.25E+06	2.25E-03
C I	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3S^o$	945.456	29.58	105798.7	9	3	3.40E+09	1.52E-01
			945.579	43.40	105798.7	5	3	1.89E+09	1.52E-01
			945.338	16.40	105798.7	3	3	1.13E+09	1.52E-01
			945.191	0	105798.7	1	3	3.78E+08	1.52E-01
C II	$2s^2 2p - 2s2p^2$	$^2P^o - ^2D$	1335.313	42.28	74931.11	6	10	2.85E+08	1.27E-01
			1335.708	63.42	74930.10	4	6	2.84E+08	1.14E-01
			1335.663	63.42	74932.62	4	4	4.75E+07	1.27E-02
			1334.532	0	74932.62	2	4	2.38E+08	1.27E-01
C II	$2s^2 2p - 2s2p^2$	$^2P^o - ^2S$	1036.7909	42.28	96493.74	6	2	2.27E+09	1.22E-01
			1037.0182	63.42	96493.74	4	2	1.53E+09	1.23E-01
			1036.3367	0	96493.74	2	2	7.58E+08	1.22E-01
C II	$2s^2 2p - 2s2p^2$	$^2P^o - ^2P$	904.0816	42.28	110651.76	6	6	4.10E+09	5.03E-01
			904.4801	63.42	110624.17	4	2	1.37E+09	8.39E-02
			904.1416	63.42	110665.56	4	4	3.42E+09	4.19E-01
			903.9616	0	110624.17	2	2	2.74E+09	3.36E-01
			903.6235	0	110665.56	2	4	6.86E+08	1.68E-01
C II	$2s^2 2p - 2s^2 3s^*$	$^2P^o - ^2S$	858.4032	42.28	116537.65	6	2	3.53E+08	1.30E-02
			858.5590	63.42	116537.65	4	2	2.35E+08	1.30E-02
			858.0918	0	116537.65	2	2	1.18E+08	1.30E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
C II	$2s^2 2p-2s^2 3d$	$^2P^\circ-^2D$	687.2482	42.28	145550.13	6	10	2.85E+09	3.36E-01
			687.3521	63.42	145549.27	4	4	4.74E+08	3.36E-02
			687.3453	63.42	145550.70	4	6	2.84E+09	3.02E-01
			687.0526	0	145549.27	2	4	2.37E+09	3.36E-01
C II	$2s^2 2p-2s^2 4s^*$	$^2P^\circ-^2S$	636.1655	42.28	157234.07	6	2	3.03E+08	6.13E-03
			636.2511	63.42	157234.07	4	2	2.02E+08	6.13E-03
			635.9945	0	157234.07	2	2	1.01E+08	6.14E-03
C II	$2s^2 2p-2s^2 4d$	$^2P^\circ-^2D$	594.9481	42.28	168124.17	6	10	1.32E+09	1.17E-01
			595.0245	63.42	168123.74	4	4	2.20E+08	1.17E-02
			595.0219	63.42	168124.45	4	6	1.33E+09	1.06E-01
			594.8000	0	168123.74	2	4	1.10E+09	1.17E-01
C II	$2s^2 2p-2s^2 5s$	$^2P^\circ-^2S$	577.0155	42.28	173347.84	6	2	1.41E+08	2.34E-03
			577.0859	63.42	173347.84	4	2	9.37E+07	2.34E-03
			576.8748	0	173347.84	2	2	4.69E+07	2.34E-03
C II	$2s^2 2p-2s^2 5d$	$^2P^\circ-^2D$	560.3710	42.28	178495.47	6	10	7.28E+08	5.71E-02
			560.4386	63.42	178495.11	4	4	1.21E+08	5.71E-03
			560.4367	63.42	178495.71	4	6	7.28E+08	5.14E-02
			560.2394	0	178495.11	2	4	6.07E+08	5.71E-02
C II	$2s^2 2p-2s^2 6s$	$^2P^\circ-^2S$	551.8095	42.28	181264.24	6	2	7.36E+07	1.12E-03
			551.8739	63.42	181264.24	4	2	4.91E+07	1.12E-03
			551.6808	0	181264.24	2	2	2.45E+07	1.12E-03
C II	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2P$	549.4668	42.28	182036.89	6	6	4.02E+08	1.82E-02
			549.5700	63.42	182023.86	4	2	1.34E+08	3.03E-03
			549.5110	63.42	182043.41	4	4	3.34E+08	1.51E-02
			549.3785	0	182023.86	2	2	2.67E+08	1.21E-02
			549.3195	0	182043.41	2	4	6.70E+07	6.06E-03
C II	$2s^2 2p-2s^2 6d$	$^2P^\circ-^2D$	543.3816	42.28	184075.00	6	10	4.73E+08	3.49E-02
			543.4453	63.42	184074.59	4	4	7.88E+07	3.49E-03
			543.4432	63.42	184075.28	4	6	4.74E+08	3.15E-02
			543.2580	0	184074.59	2	4	3.94E+08	3.49E-02
C II	$2s^2 2p-2s^2 7s$	$^2P^\circ-^2S$	538.5301	42.28	185732.93	6	2	4.17E+07	6.04E-04
			538.5914	63.42	185732.93	4	2	2.78E+07	6.04E-04
			538.4075	0	185732.93	2	2	1.39E+07	6.05E-04
C II	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2D$	530.3372	42.28	188601.54	6	10	5.15E+08	3.62E-02
			530.4538	63.42	188581.25	4	4	8.58E+07	3.62E-03
			530.3587	63.42	188615.07	4	6	5.14E+08	3.25E-02
			530.2754	0	188581.25	2	4	4.29E+08	3.62E-02
C II	$2s^2 2p-2s2p(^3P^\circ)4p$	$^2P^\circ-^2P$	466.4633	42.28	214421.41	6	6	2.72E+08	8.88E-03
			466.5465	63.42	214404.33	4	2	9.07E+07	1.48E-03
			466.4907	63.42	214429.95	4	4	2.27E+08	7.40E-03
			466.4085	0	214404.33	2	2	1.82E+08	5.92E-03
			466.3528	0	214429.95	2	4	4.55E+07	2.97E-03
C II	$2s^2 2p-2s2p(^3P^\circ)5p$	$^2P^\circ-^2P$	438.8725	42.28	227898.88	6	6	1.34E+08	3.86E-03
			438.9473	63.42	227881.21	4	2	4.45E+07	6.43E-04
			438.8962	63.42	227907.71	4	4	1.11E+08	3.22E-03
			438.8251	0	227881.21	2	2	8.90E+07	2.57E-03
			438.7741	0	227907.71	2	4	2.22E+07	1.28E-03
C III	$2s^2-2s2p$	$^1S-^1P^\circ$	977.0201	0	102352.04	1	3	1.79E+09	7.67E-01
C III	$2s^2-2s3p$	$^1S-^1P^\circ$	386.2028	0	258931.29	1	3	3.46E+09	2.32E-01
C III	$2s^2-2s4p$	$^1S-^1P^\circ$	322.5741	0	310006.32	1	3	9.66E+08	4.52E-02
C III	$2s^2-2p3s$	$^1S-^1P^\circ$	310.1697	0	322404.20	1	3	6.56E+08	2.84E-02
C III	$2s^2-2s5p$	$^1S-^1P^\circ$	291.3260	0	343258.03	1	3	1.18E+09	4.51E-02
C III	$2s^2-2p3d$	$^1S-^1P^\circ$	288.4232	0	346712.73	1	3	8.69E+07	3.25E-03
C III	$2s^2-2s6p$	$^1S-^1P^\circ$	280.0260	0	357109.68	1	3	4.65E+08	1.64E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
C III	$2s^2-2s7p$	$1S-1P^o$	274.051	0	364896	1	3	3.35E+08	1.13E-02
C III	$2s^2-2s8p$	$1S-1P^o$	270.324	0	369926	1	3	2.35E+08	7.72E-03
C IV	$1s^22s-1s^22p$	$2S-2P^o$	1549.0524	0	64555.596	2	6	2.64E+08	2.85E-01
			1550.7700	0	64484.095	2	2	2.64E+08	9.52E-02
			1548.1950	0	64591.347	2	4	2.64E+08	1.90E-01
C IV	$1s^22s-1s^23p$	$2S-2P^o$	312.4305	0	320071.2	2	6	4.62E+09	2.03E-01
			312.4511	0	320050.1	2	2	4.63E+09	6.78E-02
			312.4202	0	320081.7	2	4	4.61E+09	1.35E-01
C IV	$1s^22s-1s^24p$	$2S-2P^o$	244.9061	0	408319.8	2	6	2.26E+09	6.11E-02
			244.9113	0	408311.1	2	2	2.26E+09	2.03E-02
			244.9034	0	408324.2	2	4	2.26E+09	4.07E-02
C IV	$1s^22s-1s^25p$	$2S-2P^o$	222.7864	0	448860.5	2	6	1.21E+09	2.70E-02
			222.7887	0	448855.8	2	2	1.21E+09	9.03E-03
			222.7852	0	448862.9	2	4	1.21E+09	1.80E-02
C IV	$1s^22s-1s^26p$	$2S-2P^o$	212.4145	0	470777.6	2	6	7.15E+08	1.45E-02
			212.4157	0	470775.0	2	2	7.14E+08	4.83E-03
			212.4139	0	470778.9	2	4	7.15E+08	9.68E-03
C IV	$1s^22s-1s^27p$	$2S-2P^o$	206.6329	0	483950.0	2	6	4.54E+08	8.71E-03
			206.6336	0	[483948.4]	2	2	4.53E+08	2.90E-03
			206.6326	0	[483950.8]	2	4	4.54E+08	5.81E-03
C IV	$1s^22s-1s^28p$	$2S-2P^o$	203.0544	0	492478.8	2	6	3.05E+08	5.66E-03
			203.0549	0	[492477.7]	2	2	3.04E+08	1.88E-03
			203.0542	0	[492479.3]	2	4	3.05E+08	3.77E-03
C IV	$1s^22s-1s^29p$	$2S-2P^o$	200.6761	0	498315.3	2	6	2.15E+08	3.90E-03
			200.6764	0	[498314.6]	2	2	2.15E+08	1.30E-03
			200.6760	0	[498315.7]	2	4	2.15E+08	2.60E-03
C IV	$1s^22s-1s^210p$	$2S-2P^o$	199.040	0	502412	2	6	1.57E+08	2.80E-03
			199.040	0	502412	2	4	1.57E+08	1.87E-03
			199.040	0	502412	2	2	1.57E+08	9.34E-04
C V	$1s^2-1s2p$	$1S-1P^o$	40.2678	0	2483372.8	1	3	8.89E+11	6.48E-01
C V	$1s^2-1s3p$	$1S-1P^o$	34.9728	0	2859368.6	1	3	2.56E+11	1.41E-01
C V	$1s^2-1s4p$	$1S-1P^o$	33.4262	0	2991662.4	1	3	1.07E+11	5.36E-02
C V	$1s^2-1s5p$	$1S-1P^o$	32.7542	0	3053041.3	1	3	5.41E+10	2.61E-02
C V	$1s^2-1s6p$	$1S-1P^o$	32.3998	0	3086438.8	1	3	3.13E+10	1.48E-02
C V	$1s^2-1s7p$	$1S-1P^o$	32.1901	0	[3106541]	1	3	1.97E+10	9.17E-03
C V	$1s^2-1s8p$	$1S-1P^o$	32.0552	0	[3119619]	1	3	1.32E+10	6.09E-03
C VI	$1s-2p$	$2S-2P^o$	33.7360	0	2964194.69	2	6	8.13E+11	4.16E-01
			33.7396	0	[2963878.05]	2	2	8.14E+11	1.39E-01
			33.7342	0	[2964353.01]	2	4	8.12E+11	2.77E-01
C VI	$1s-3p$	$2S-2P^o$	28.4656	0	3513015.45	2	6	2.17E+11	7.90E-02
			28.4663	0	[3512921.62]	2	2	2.16E+11	2.63E-02
			28.4652	0	[3513062.36]	2	4	2.17E+11	5.27E-02
C VI	$1s-4p$	$2S-2P^o$	26.9898	0	3705107.15	2	6	8.85E+10	2.90E-02
			26.9901	0	[3705067.57]	2	2	8.85E+10	9.67E-03
			26.9896	0	[3705126.94]	2	4	8.84E+10	1.93E-02
C VI	$1s-5p$	$2S-2P^o$	26.3573	0	3794015.71	2	6	4.45E+10	1.39E-02
			26.3574	0	[3793995.44]	2	2	4.46E+10	4.65E-03
			26.3572	0	[3794025.84]	2	4	4.46E+10	9.30E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
C VI	$1s-6p$	$2S-2P^o$	26.0260	0	3842310.23	2	6	2.56E+10	7.80E-03
			26.0261	0	[3842298.50]	2	2	2.56E+10	2.60E-03
			26.0260	0	[3842316.09]	2	4	2.56E+10	5.20E-03
C VI	$1s-7p$	$2S-2P^o$	25.8303	0	3871429.52	2	6	1.61E+10	4.82E-03
			25.8303	0	[3871422.13]	2	2	1.60E+10	1.60E-03
			25.8302	0	[3871433.21]	2	4	1.60E+10	3.21E-03
C VI	$1s-8p$	$2S-2P^o$	25.7048	0	3890328.63	2	6	1.07E+10	3.19E-03
			25.7048	0	[3890331.10]	2	4	1.07E+10	2.12E-03
			25.7048	0	[3890323.68]	2	2	1.07E+10	1.06E-03
C VI	$1s-9p$	$2S-2P^o$	25.6194	0	3903285.55	2	6	7.52E+09	2.22E-03
			25.6195	0	[3903282.08]	2	2	7.50E+09	7.38E-04
			25.6194	0	[3903287.29]	2	4	7.52E+09	1.48E-03
C VI	$1s-10p$	$2S-2P^o$	25.5588	0	3912553.41	2	6	5.45E+09	1.60E-03
			25.5588	0	[3912550.88]	2	2	5.46E+09	5.35E-04
			25.5587	0	[3912554.68]	2	4	5.46E+09	1.07E-03
N I	$2s^2 2p^3-2p^2(^3P)3s$	$4S^o-4P$	1199.9674	0	83335.598	4	12	5.02E+08	3.25E-01
			1200.7098	0	83284.070	4	2	5.01E+08	5.41E-02
			1200.2233	0	83317.830	4	4	5.00E+08	1.08E-01
			1199.5496	0	83364.620	4	6	5.04E+08	1.63E-01
N I	$2s^2 2p^3-2s2p^4$	$4S^o-4P$	1134.6559	0	88132.448	4	12	3.99E+07	2.31E-02
			1134.9803	0	88107.260	4	6	4.00E+07	1.16E-02
			1134.4149	0	88151.170	4	4	3.99E+07	7.70E-03
			1134.1653	0	88170.570	4	2	3.99E+07	3.85E-03
N I	$2s^2 2p^3-2p^2(^3P)4s$	$4S^o-4P$	964.3771	0	103693.88	4	12	7.51E+07	3.14E-02
			965.0413	0	103622.51	4	2	7.48E+07	5.22E-03
			964.6256	0	103667.16	4	4	7.53E+07	1.05E-02
			963.9903	0	103735.48	4	6	7.51E+07	1.57E-02
N I	$2s^2 2p^3-2p^2(^3P)3d$	$4S^o-4P$	953.7724	0	104846.82	4	12	1.69E+08	6.93E-02
			953.9699	0	104825.110	4	6	1.70E+08	3.47E-02
			953.6549	0	104859.73	4	4	1.69E+08	2.31E-02
			953.4152	0	104886.10	4	2	1.70E+08	1.16E-02
N I	$2s^2 2p^3-2p^2(^3P)5s$	$4S^o-4P$	910.0489	0	109884.209	4	12	3.57E+07	1.33E-02
			910.6454	0	109812.233	4	2	3.57E+07	2.22E-03
			910.2782	0	109856.520	4	4	3.58E+07	4.45E-03
			909.6974	0	109926.661	4	6	3.58E+07	6.67E-03
N I	$2s^2 2p^3-2p^2(^3P)4d$	$4S^o-4P$	906.4877	0	110315.896	4	12	9.04E+07	3.34E-02
			906.6185	0	110299.974	4	6	9.03E+07	1.67E-02
			906.4316	0	110322.721	4	4	9.01E+07	1.11E-02
			906.2074	0	110350.014	4	2	9.05E+07	5.57E-03
N I	$2s^2 2p^3-2p^2(^3P)6s$	$4S^o-4P$	887.7987	0	112638.144	4	12	1.86E+07	6.58E-03
			888.3719	0	112565.470	4	2	1.86E+07	1.10E-03
			888.0237	0	112609.612	4	4	1.85E+07	2.19E-03
			887.4580	0	112681.389	4	6	1.85E+07	3.28E-03
N I	$2s^2 2p^3-2p^2(^3P)5d$	$4S^o-4P$	886.2372	0	112836.61	4	12	5.10E+07	1.80E-02
			886.3326	0	112824.459	4	6	5.09E+07	8.99E-03
			886.2261	0	112838.02	4	4	5.09E+07	5.99E-03
			885.9729	0	112870.27	4	2	5.10E+07	3.00E-03
N I	$2s^2 2p^3-2p^2(^3P)7s$	$4S^o-4P$	876.4133	0	114101.422	4	12	1.08E+07	3.74E-03
			876.9879	0	114026.654	4	2	1.08E+07	6.22E-04
			876.6458	0	114071.153	4	4	1.08E+07	1.25E-03
			876.0670	0	114146.525	4	6	1.08E+07	1.87E-03
N I	$2s^2 2p^3-2p^2(^3P)6d$	$4S^o-4P$	875.6257	0	114204.0	4	12	3.10E+07	1.07E-02
			875.7212	0	114191.6	4	6	3.09E+07	5.33E-03
			875.6567	0	114200.0	4	4	3.09E+07	3.55E-03
			875.2774	0	114249.5	4	2	3.10E+07	1.78E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N I	$2s^2 2p^3 - 2p^2(^3P)8s$	$4S^\circ - ^4P$	869.7718	0	114972.7	4	12	6.79E+06	2.31E-03
			870.3675	0	114894.0	4	2	6.80E+06	3.86E-04
			870.0260	0	114939.1	4	4	6.79E+06	7.71E-04
			869.4042	0	115021.3	4	6	6.82E+06	1.16E-03
N I	$2s^2 2p^3 - 2p^2(^3P)7d$	$4S^\circ - ^4P$	869.4588	0	115014.1	4	12	2.00E+07	6.79E-03
			869.4820	0	115011.0	4	6	2.00E+07	3.40E-03
			869.4238	0	115018.7	4	4	1.99E+07	2.26E-03
				0		4	2	2.03E+07	1.15E-03
N I	$2s^2 2p^3 - 2p^2(^3P)9s$	$4S^\circ - ^4P$	865.5882	0	115528.4	4	12	4.54E+06	1.53E-03
			866.1796	0	115449.5	4	2	4.55E+06	2.56E-04
			865.8346	0	115495.5	4	4	4.55E+06	5.11E-04
			865.2270	0	115576.6	4	6	4.56E+06	7.68E-04
N I	$2s^2 2p^3 - 2p^2(^3P)10s$	$4S^\circ - ^4P$	862.7533	0	115908.0	4	12	3.20E+06	1.07E-03
			863.3394	0	115829.3	4	2	3.19E+06	1.78E-04
			862.9877	0	115876.5	4	4	3.20E+06	3.57E-04
			862.4020	0	115955.2	4	6	3.20E+06	5.35E-04
N II	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3D^\circ$	1085.1277	88.89	92243.94	9	15	3.70E+08	1.09E-01
			1085.7096	130.80	92236.46	5	7	3.68E+08	9.11E-02
			1085.5511	130.80	92249.91	5	5	9.23E+07	1.63E-02
			1085.5328	130.80	92251.46	5	3	1.03E+07	1.09E-03
			1084.5841	48.67	92249.91	3	5	2.77E+08	8.14E-02
			1084.5659	48.67	92251.46	3	3	1.54E+08	2.71E-02
			1083.9937	0	92251.46	1	3	2.06E+08	1.09E-01
N II	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3P^\circ$	916.3408	88.89	109218.59	9	9	1.27E+09	1.60E-01
			916.7109	130.80	109216.44	5	3	5.32E+08	4.02E-02
			916.7068	130.80	109216.93	5	5	9.60E+08	1.21E-01
			916.0213	48.67	109216.44	3	3	3.20E+08	4.02E-02
			916.0172	48.67	109216.93	3	5	3.19E+08	6.69E-02
			915.8795	48.67	109233.34	3	1	1.28E+09	5.36E-02
			915.6131	0	109216.44	1	3	4.24E+08	1.60E-01
N II	$2s^2 2p^2 - 2s^2 2p3s$	$^3P - ^3P^\circ$	671.4865	88.89	149012.21	9	9	1.13E+09	7.66E-02
			672.0016	130.80	148939.97	5	3	4.73E+08	1.92E-02
			671.7734	48.67	148908.39	3	1	1.14E+09	2.56E-02
			671.6309	48.67	148939.97	3	3	2.82E+08	1.91E-02
			671.4114	0	148939.97	1	3	3.78E+08	7.66E-02
			671.3864	130.80	149076.32	5	5	8.51E+08	5.75E-02
			671.0164	48.67	149076.32	3	5	2.84E+08	3.20E-02
N II	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3S^\circ$	645.0045	88.89	155126.56	9	3	1.08E+10	2.24E-01
			645.1789	130.80	155126.56	5	3	5.98E+09	2.24E-01
			644.8372	48.67	155126.56	3	3	3.59E+09	2.24E-01
			644.6349	0	155126.56	1	3	1.20E+09	2.24E-01
N II	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3D^\circ$	533.6697	88.89	187470.72	9	15	4.20E+09	2.99E-01
			533.8841	130.80	187437.36	5	3	1.17E+08	2.99E-03
			533.8157	130.80	187461.36	5	5	1.05E+09	4.48E-02
			533.7293	130.80	187491.70	5	7	4.20E+09	2.51E-01
			533.6501	48.67	187437.36	3	3	1.75E+09	7.48E-02
			533.5818	48.67	187461.36	3	5	3.15E+09	2.24E-01
			533.5116	0	187437.36	1	3	2.34E+09	2.99E-01
N II	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3P^\circ$	529.6767	88.89	188883.31	9	9	2.45E+09	1.03E-01
			529.8677	130.80	188857.17	5	5	1.83E+09	7.71E-02
			529.7223	130.80	188908.97	5	3	1.02E+09	2.57E-02
			529.6372	48.67	188857.17	3	5	6.12E+08	4.29E-02
			529.4919	48.67	188908.97	3	3	6.11E+08	2.57E-02
			529.4132	48.67	188937.04	3	1	2.45E+09	3.43E-02
			529.3555	0	188908.97	1	3	8.17E+08	1.03E-01
N II	$2s^2 2p^2 - 2s^2 2p4s$	$^3P - ^3P^\circ$	508.7412	88.89	196652.48	9	9	2.71E+08	1.05E-02
			509.0067	130.80	196591.87	5	3	1.12E+08	2.61E-03
			508.9282	48.67	196540.03	3	1	2.69E+08	3.48E-03
			508.7940	48.67	196591.87	3	3	6.72E+07	2.61E-03
			508.6974	130.80	196711.34	5	5	2.02E+08	7.84E-03
			508.6680	0	196591.87	1	3	9.02E+07	1.05E-02
			508.4849	48.67	196711.34	3	5	6.73E+07	4.35E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N II	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3D^o$	475.7638	88.89	210277.23	9	15	2.10E+09	1.19E-01
			475.9438	130.80	210239.63	5	3	5.84E+07	1.19E-03
			475.8845	130.80	210265.84	5	5	5.24E+08	1.78E-02
			475.8038	130.80	210301.48	5	7	2.10E+09	9.97E-02
			475.7579	48.67	210239.63	3	3	8.72E+08	2.96E-02
			475.6985	48.67	210265.84	3	5	1.58E+09	8.91E-02
			475.6477	0	210239.63	1	3	1.17E+09	1.19E-01
N II	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3P^o$	474.7448	88.89	210728.36	9	9	1.29E+09	4.35E-02
			474.8919	130.80	210705.06	5	5	9.64E+08	3.26E-02
			474.7877	130.80	210751.23	5	3	5.38E+08	1.09E-02
			474.7067	48.67	210705.06	3	5	3.21E+08	1.81E-02
			474.6027	48.67	210751.23	3	3	3.23E+08	1.09E-02
			474.5463	48.67	210776.25	3	1	1.29E+09	1.45E-02
			474.4931	0	210751.23	1	3	4.31E+08	4.36E-02
N II	$2s^2 2p^2 - 2s^2 2p5s$	$^3P - ^3P^o$	466.7798	88.89	214322.65	9	9	1.11E+08	3.64E-03
			467.0132	130.80	214257.49	5	3	4.63E+07	9.09E-04
			466.9339	48.67	214211.76	3	1	1.11E+08	1.21E-03
			466.8342	48.67	214257.49	3	3	2.79E+07	9.10E-04
			466.7376	130.80	214383.93	5	5	8.36E+07	2.73E-03
			466.7281	0	214257.49	1	3	3.72E+07	3.64E-03
			466.5588	48.67	214383.93	3	5	2.79E+07	1.52E-03
N II	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3D^o$	453.3161	88.89	220685.51	9	15	1.22E+09	6.25E-02
			453.4964	130.80	220639.70	5	3	3.38E+07	6.25E-04
			453.4257	130.80	220674.08	5	5	3.04E+08	9.36E-03
			453.3451	130.80	220713.31	5	7	1.22E+09	5.25E-02
			453.3276	48.67	220639.70	3	3	5.06E+08	1.56E-02
			453.2569	48.67	220674.08	3	5	9.12E+08	4.68E-02
			453.2276	0	220639.70	1	3	6.75E+08	6.24E-02
N II	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3P^o$	452.8596	88.89	220907.87	9	9	7.22E+08	2.22E-02
			452.9846	130.80	220888.87	5	5	5.43E+08	1.67E-02
			452.9076	130.80	220926.41	5	3	3.01E+08	5.55E-03
			452.8161	48.67	220888.87	3	5	1.81E+08	9.25E-03
			452.7391	48.67	220926.41	3	3	1.81E+08	5.56E-03
			452.6964	48.67	220947.27	3	1	7.24E+08	7.41E-03
			452.6394	0	220926.41	1	3	2.41E+08	2.22E-02
N II	$2s^2 2p^2 - 2s^2 2p6s$	$^3P - ^3P^o$	448.9836	88.89	222814.20	9	9	5.23E+07	1.58E-03
			449.2097	130.80	222743.96	5	3	2.17E+07	3.93E-04
			449.1228	48.67	222704.94	3	1	5.21E+07	5.25E-04
			449.0441	48.67	222743.96	3	3	1.30E+07	3.94E-04
			448.9460	0	222743.96	1	3	1.74E+07	1.58E-03
			448.9390	130.80	222878.19	5	5	3.91E+07	1.18E-03
			448.7736	48.67	222878.19	3	5	1.31E+07	6.57E-04
N II	$2s^2 2p^2 - 2s^2 2p^2(^4P)3p$	$^3P - ^3S^o$	448.4709	88.89	223068.82	9	3	2.56E+08	2.57E-03
			448.5552	130.80	223068.82	5	3	1.42E+08	2.57E-03
			448.3900	48.67	223068.82	3	3	8.53E+07	2.57E-03
			448.2921	0	223068.82	1	3	2.84E+07	2.57E-03
N II	$2s^2 2p^2 - 2s^2 2p6d$	$^3P - ^3D^o$	442.1055	88.89	226279.2	9	15	9.44E+08	4.61E-02
			442.3119	130.80	226215.6	5	3	2.61E+07	4.60E-04
			442.1885	130.80	226278.72	5	5	2.36E+08	6.91E-03
			442.1513	48.67	226215.6	3	3	3.92E+08	1.15E-02
			442.1334	130.80	226306.90	5	7	9.43E+08	3.87E-02
			442.0562	0	226215.6	1	3	5.25E+08	4.61E-02
			442.0279	48.67	226278.72	3	5	7.09E+08	3.46E-02
N II	$2s^2 2p^2 - 2s^2 2p6d$	$^3P - ^3P^o$	441.8122	88.89	226429.4	9	9	4.65E+08	1.36E-02
			441.9227	130.80	226414.7	5	5	3.48E+08	1.02E-02
			441.8649	130.80	226444.3	5	3	1.93E+08	3.39E-03
			441.7624	48.67	226414.7	3	5	1.16E+08	5.65E-03
			441.7046	48.67	226444.3	3	3	1.16E+08	3.39E-03
			441.6771	48.67	226458.4	3	1	4.64E+08	4.52E-03
			441.6097	0	226444.3	1	3	1.55E+08	1.36E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N II	$2s^2 2p^2 - 2s^2 2p7s$	$^3P - ^3P^o$	439.6440	88.89	227545.65	9	9	2.31E+07	6.70E-04
			439.8658	130.80	227472.89	5	3	9.65E+06	1.68E-04
			439.7666	48.67	227442.0	3	1	2.32E+07	2.24E-04
			439.7069	48.67	227472.89	3	3	5.80E+06	1.68E-04
			439.6128	0	227472.89	1	3	7.71E+06	6.70E-04
			439.6006	130.80	227610.04	5	5	1.74E+07	5.03E-04
			439.4419	48.67	227610.04	3	5	5.80E+06	2.80E-04
N II	$2s^2 2p^2 - 2s^2 2p^2(^4P)3p$	$^3P - ^3D^o$	436.1993	88.89	229341.92	9	15	8.03E+08	3.82E-02
			436.3552	130.80	229301.90	5	3	2.23E+07	3.82E-04
			436.3092	130.80	229326.06	5	5	2.01E+08	5.74E-03
			436.2248	130.80	229370.40	5	7	8.04E+08	3.21E-02
			436.1989	48.67	229301.90	3	3	3.35E+08	9.56E-03
			436.1529	48.67	229326.06	3	5	6.04E+08	2.87E-02
			436.1063	0	229301.90	1	3	4.47E+08	3.82E-02
N II	$2s^2 2p^2 - 2s^2 2p7d$	$^3P - ^3P^o$	435.4810	88.89	229720.1	9	9	3.76E+08	1.07E-02
			435.5677	130.80	229716.26	5	5	2.81E+08	8.00E-03
			435.5515	130.80	229724.8	5	3	1.56E+08	2.67E-03
			435.4119	48.67	229716.26	3	5	9.39E+07	4.45E-03
			435.3957	48.67	229724.8	3	3	9.39E+07	2.67E-03
			435.3957	48.67	229724.8	3	1	3.76E+08	3.56E-03
			435.3035	0	229724.8	1	3	1.26E+08	1.07E-02
N II	$2s^2 2p^2 - 2s^2 2p7d$	$^3P - ^3D^o$	434.7649	88.89	230098.25	9	15	1.19E+08	5.62E-03
			434.9182	130.80	230059.07	5	3	3.30E+06	5.62E-05
			434.8721	130.80	230083.49	5	5	2.97E+07	8.43E-04
			434.7925	130.80	230125.58	5	7	1.19E+08	4.72E-03
			434.7629	48.67	230059.07	3	3	4.98E+07	1.41E-03
			434.7168	48.67	230083.49	3	5	8.94E+07	4.22E-03
			434.6710	0	230059.07	1	3	6.61E+07	5.62E-03
N II	$2s^2 2p^2 - 2s^2 2p8d$	$^3P - ^3D^o$	431.5164	88.89	231829.8	9	15	1.83E+08	8.53E-03
			431.8047	130.80	231717.0	5	5	4.58E+07	1.28E-03
			431.6923	130.80	231777.3	5	3	5.09E+06	8.54E-05
			431.6516	48.67	231717.0	3	5	1.37E+08	6.40E-03
			431.5393	48.67	231777.3	3	3	7.66E+07	2.14E-03
			431.4486	0	231777.3	1	3	1.02E+08	8.53E-03
			431.4025	130.80	231932.9	5	7	1.84E+08	7.17E-03
N II	$2s^2 2p^2 - 2s^2 2p^2(^4P)3p^*$	$^3P - ^3P^o$	431.3965	88.89	231894.2	9	9	4.44E+08	1.24E-02
			431.4855	130.80	231888.3	5	3	1.86E+08	3.11E-03
			431.4658	130.80	231898.9	5	5	3.35E+08	9.34E-03
			431.3326	48.67	231888.3	3	3	1.11E+08	3.11E-03
			431.3326	48.67	231888.3	3	1	4.47E+08	4.16E-03
			431.3129	48.67	231898.9	3	5	1.12E+08	5.20E-03
			431.2421	0	231888.3	1	3	1.48E+08	1.24E-02
N II	$2s^2 2p^2 - 2s^2 2p8d^*$	$^3P - ^3P^o$	430.5583	88.89	232345.5	9	9	1.83E+07	5.10E-04
			430.6360	130.80	232345.5	5	5	1.38E+07	3.83E-04
			430.4837	48.67	232345.5	3	5	4.60E+06	2.13E-04
				48.67		3	3	4.57E+06	1.27E-04
				130.80		5	3	7.68E+06	1.28E-04
				48.67		3	1	1.83E+07	1.70E-04
				0		1	3	6.12E+06	5.10E-04
N II	$2s^2 2p^2 - 2s^2 2p9s^*$	$^3P - ^3P^o$	429.7892	88.89	232761.1	9	9	6.61E+07	1.83E-03
			429.8964	130.80	232745.0	5	3	2.75E+07	4.58E-04
			429.8428	130.80	232774.01	5	5	4.98E+07	1.38E-03
			429.7446	48.67	232745.0	3	3	1.65E+07	4.58E-04
			429.7446	48.67	232745.0	3	1	6.62E+07	6.11E-04
			429.6911	48.67	232774.01	3	5	1.66E+07	7.65E-04
			429.6548	0	232745.0	1	3	2.20E+07	1.83E-03
N II	$2s^2 2p^2 - 2s^2 2p9d$	$^3P - ^3D^o$	428.6758	88.89	233365.4	9	15	1.46E+08	6.72E-03
			428.9417	130.80	233262.7	5	3	4.06E+06	6.72E-05
			428.7907	48.67	233262.7	3	3	6.09E+07	1.68E-03
			428.7251	130.80	233380.5	5	5	3.67E+07	1.01E-03
			428.7012	0	233262.7	1	3	8.13E+07	6.72E-03
			428.6916	130.80	233398.7	5	7	1.46E+08	5.65E-03
			428.5742	48.67	233380.5	3	5	1.10E+08	5.05E-03



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N II	$2s^2 2p^2 - 2s^2 2p9d$	$^3P - ^3P^o$	428.5026	88.89	233459.7	9	9	7.16E+07	1.97E-03
			428.5831	130.80	233457.8	5	3	2.98E+07	4.92E-04
			428.5768	130.80	233461.2	5	5	5.37E+07	1.48E-03
			428.4323	48.67	233457.8	3	3	1.79E+07	4.92E-04
			428.4323	48.67	233457.8	3	1	7.14E+07	6.55E-04
			428.4260	48.67	233461.2	3	5	1.79E+07	8.20E-04
			428.3429	0	233457.8	1	3	2.39E+07	1.97E-03
N II	$2s^2 2p^2 - 2s^2 2p10s$	$^3P - ^3P^o$	427.9692	88.89	233750.6	9	9	2.37E+07	6.51E-04
			428.2178	130.80	233656.8	5	3	9.88E+06	1.63E-04
			428.0673	48.67	233656.8	3	3	5.93E+06	1.63E-04
			427.9781	0	233656.8	1	3	7.90E+06	6.51E-04
			427.9430	130.80	233806.8	5	5	1.78E+07	4.89E-04
			427.7926	48.67	233806.8	3	5	5.95E+06	2.72E-04
				48.67		3	1	2.37E+07	2.17E-04
N II	$2s^2 2p^2 - 2s^2 2p10d$	$^3P - ^3D^o$	426.7544	88.89	234415.7	9	15	1.13E+08	5.12E-03
			427.0493	130.80	234295.8	5	3	3.11E+06	5.11E-05
			426.8996	48.67	234295.8	3	3	4.68E+07	1.28E-03
			426.8109	0	234295.8	1	3	6.25E+07	5.12E-03
			426.7797	130.80	234443.7	5	5	2.81E+07	7.67E-04
			426.7736	130.80	234447.1	5	7	1.12E+08	4.30E-03
			426.6302	48.67	234443.7	3	5	8.44E+07	3.84E-03
N II	$2s^2 2p^2 - 2s^2 2p10d$	$^3P - ^3P^o$	426.5947	88.89	234503.4	9	9	6.30E+07	1.72E-03
			426.6898	130.80	234493.1	5	5	4.73E+07	1.29E-03
			426.6397	130.80	234520.6	5	3	2.63E+07	4.31E-04
			426.5403	48.67	234493.1	3	5	1.58E+07	7.18E-04
			426.4903	48.67	234520.6	3	3	1.58E+07	4.31E-04
			426.4018	0	234520.6	1	3	2.10E+07	1.72E-03
				48.67		3	1	6.31E+07	5.74E-04
N II	$2s^2 2p^2 - 2s2p^2(^4P)4p$	$^3P - ^3S^o$	385.5943	88.89	259428.8	9	3	2.69E+08	2.00E-03
			385.6567	130.80	259428.8	5	3	1.49E+08	2.00E-03
			385.5345	48.67	259428.8	3	3	8.97E+07	2.00E-03
			385.4622	0	259428.8	1	3	2.99E+07	2.00E-03
N II	$2s^2 2p^2 - 2s2p^2(^4P)5p$	$^3P - ^3S^o$	365.0292	88.89	274039.6	9	3	1.55E+08	1.03E-03
			365.0850	130.80	274039.6	5	3	8.59E+07	1.03E-03
			364.9756	48.67	274039.6	3	3	5.16E+07	1.03E-03
			364.9108	0	274039.6	1	3	1.72E+07	1.03E-03
N III	$2s^2 2p - 2s2p^2$	$^2P^o - ^2D$	990.979	116.3	101026.6	6	10	4.97E+08	1.22E-01
			991.577	174.4	101023.9	4	6	4.97E+08	1.10E-01
			991.511	174.4	101030.6	4	4	8.28E+07	1.22E-02
			989.799	0	101030.6	2	4	4.15E+08	1.22E-01
N III	$2s^2 2p - 2s2p^2$	$^2P^o - ^2S$	764.0118	116.3	131004.3	6	2	2.81E+09	8.20E-02
			764.3513	174.4	131004.3	4	2	1.87E+09	8.19E-02
			763.3337	0	131004.3	2	2	9.39E+08	8.20E-02
N III	$2s^2 2p - 2s2p^2$	$^2P^o - ^2P$	685.7166	116.3	145949.1	6	6	5.70E+09	4.02E-01
			686.3357	174.4	145875.7	4	2	1.90E+09	6.70E-02
			685.8174	174.4	145985.8	4	4	4.75E+09	3.35E-01
			685.5151	0	145875.7	2	2	3.80E+09	2.68E-01
			684.9981	0	145985.8	2	4	9.60E+08	1.35E-01
N III	$2s^2 2p - 2s^2 3s$	$^2P^o - ^2S$	452.1083	116.3	221302.2	6	2	3.09E+09	3.16E-02
			452.2272	174.4	221302.2	4	2	2.06E+09	3.16E-02
			451.8708	0	221302.2	2	2	1.03E+09	3.16E-02
N III	$2s^2 2p - 2s^2 3d$	$^2P^o - ^2D$	374.3559	116.3	267241.8	6	10	1.26E+10	4.41E-01
			374.4421	174.4	267238.4	4	4	2.10E+09	4.41E-02
			374.4342	174.4	267244.0	4	6	1.26E+10	3.97E-01
			374.1977	0	267238.4	2	4	1.05E+10	4.41E-01
N III	$2s^2 2p - 2s^2 4s$	$^2P^o - ^2S$	332.2631	116.3	301082.6	6	2	1.11E+09	6.14E-03
			332.3273	174.4	301082.6	4	2	7.42E+08	6.14E-03
			332.1348	0	301082.6	2	2	3.71E+08	6.14E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N III	$2s^2 2p-2s 2p(^3P^o)3p$	$^2P^o-^2P$	323.5713	116.3	309167.2	6	6	3.32E+09	5.21E-02
			323.6698	174.4	309131.2	4	2	1.11E+09	8.69E-03
			323.6133	174.4	309185.2	4	4	2.76E+09	4.34E-02
			323.4872	0	309131.2	2	2	2.22E+09	3.48E-02
			323.4307	0	309185.2	2	4	5.52E+08	1.73E-02
N III	$2s^2 2p-2s^2 4d$	$^2P^o-^2D$	314.8114	116.3	317766.8	6	10	7.79E+09	1.93E-01
			314.8879	174.4	317747.7	4	4	1.30E+09	1.93E-02
			314.8564	174.4	317779.5	4	6	7.80E+09	1.74E-01
			314.7151	0	317747.7	2	4	6.53E+09	1.94E-01
N III	$2s^2 2p-2s 2p(^3P^o)3p$	$^2P^o-^2D$	311.6089	116.3	321031.4	6	10	6.55E+08	1.59E-02
			311.7170	174.4	320978.2	4	4	1.10E+08	1.60E-03
			311.6309	174.4	321066.8	4	6	6.59E+08	1.44E-02
			311.5476	0	320978.2	2	4	5.46E+08	1.59E-02
N III	$2s^2 2p-2s 2p(^3P^o)3p$	$^2P^o-^2S$	305.8649	116.3	327058.0	6	2	1.45E+09	6.79E-03
			305.9193	174.4	327058.0	4	2	9.68E+08	6.79E-03
			305.7562	0	327058.0	2	2	4.84E+08	6.79E-03
N III	$2s^2 2p-2s^2 5s$	$^2P^o-^2S$	299.7640	116.3	333712.0	6	2	1.21E+09	5.45E-03
			299.8163	174.4	333712.0	4	2	8.07E+08	5.44E-03
			299.6596	0	333712.0	2	2	4.05E+08	5.45E-03
N III	$2s^2 2p-2s^2 5d$	$^2P^o-^2D$	292.5413	116.3	341948.4	6	10	2.26E+09	4.83E-02
			292.5916	174.4	341947.7	4	4	3.76E+08	4.83E-03
			292.5907	174.4	341948.8	4	6	2.26E+09	4.35E-02
			292.4424	0	341947.7	2	4	1.89E+09	4.84E-02
N III	$2s^2 2p-2s^2 6s$	$^2P^o-^2S$	285.9524	116.3	349824.8	6	2	4.67E+08	1.91E-03
			286.0000	174.4	349824.8	4	2	3.11E+08	1.91E-03
			285.8574	0	349824.8	2	2	1.56E+08	1.91E-03
N III	$2s^2 2p-2s^2 6d$	$^2P^o-^2D$	282.1557	116.3	354530.5	6	10	1.36E+09	2.71E-02
			282.2020	174.4	354530.5	4	6	1.36E+09	2.44E-02
			282.2020	174.4	354530.5	4	4	2.27E+08	2.71E-03
			282.0632	0	354530.5	2	4	1.14E+09	2.71E-02
N III	$2s^2 2p-2s^2 7s$	$^2P^o-^2S$	278.5268	116.3	359148.1	6	2	2.97E+08	1.15E-03
			278.5719	174.4	359148.1	4	2	1.98E+08	1.15E-03
			278.4367	0	359148.1	2	2	9.89E+07	1.15E-03
N III	$2s^2 2p-2s^2 7d$	$^2P^o-^2D$	276.281	116.3	362066	6	10	8.65E+08	1.65E-02
			276.326	174.4	362066	4	6	8.68E+08	1.49E-02
			276.326	174.4	362066	4	4	1.45E+08	1.66E-03
			276.193	0	362066	2	4	7.21E+08	1.65E-02
N III	$2s^2 2p-2s^2 8s$	$^2P^o-^2S$	274.0643	116.3	364994.2	6	2	2.16E+08	8.10E-04
			274.1079	174.4	364994.2	4	2	1.44E+08	8.10E-04
			273.9770	0	364994.2	2	2	7.20E+07	8.10E-04
N III	$2s^2 2p-2s^2 8d$	$^2P^o-^2D$	272.611	116.3	366940	6	10	5.92E+08	1.10E-02
			272.654	174.4	366940	4	6	5.93E+08	9.92E-03
			272.654	174.4	366940	4	4	9.87E+07	1.10E-03
			272.524	0	366940	2	4	4.94E+08	1.10E-02
N III	$2s^2 2p-2s^2 9s$	$^2P^o-^2S$	271.1662	116.3	368893.8	6	2	1.73E+08	6.34E-04
			271.2089	174.4	368893.8	4	2	1.15E+08	6.34E-04
			271.0807	0	368893.8	2	2	5.75E+07	6.34E-04
N III	$2s^2 2p-2s^2 9d$	$^2P^o-^2D$	270.159	116.3	370269	6	10	4.29E+08	7.82E-03
			270.201	174.4	370269	4	6	4.29E+08	7.04E-03
			270.201	174.4	370269	4	4	7.14E+07	7.82E-04
			270.074	0	370269	2	4	3.58E+08	7.82E-03
N III	$2s^2 2p-2s^2 10s$	$^2P^o-^2S$	269.1568	116.3	371646.9	6	2	1.50E+08	5.43E-04
			269.1989	174.4	371646.9	4	2	1.00E+08	5.43E-04
			269.0726	0	371646.9	2	2	5.01E+07	5.44E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N III	$2s^2 2p-2s^2 10d$	$^2P^\circ-^2D$	268.431	116.3	372651	6	10	3.32E+08	5.97E-03
			268.473	174.4	372651	4	6	3.31E+08	5.37E-03
			268.473	174.4	372651	4	4	5.52E+07	5.97E-04
			268.348	0	372651	2	4	2.76E+08	5.97E-03
N III	$2s^2 2p-2s2p(^3P^\circ)4p$	$^2P^\circ-^2P$	266.9022	116.3	374785.3	6	6	7.97E+08	8.51E-03
			266.9714	174.4	374746.4	4	2	2.66E+08	1.42E-03
			266.9298	174.4	374804.8	4	4	6.64E+08	7.09E-03
			266.8471	0	374746.4	2	2	5.32E+08	5.68E-03
			266.8055	0	374804.8	2	4	1.33E+08	2.84E-03
N III	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2P$	264.9120	116.3	377600.2	6	6	1.87E+09	1.97E-02
			264.9684	174.4	377577.9	4	2	6.21E+08	3.27E-03
			264.9449	174.4	377611.3	4	4	1.56E+09	1.64E-02
			264.8460	0	377577.9	2	2	1.25E+09	1.31E-02
			264.8226	0	377611.3	2	4	3.11E+08	6.54E-03
N III	$2s^2 2p-2s2p(^3P^\circ)5p$	$^2P^\circ-^2P$	248.4087	116.3	402678.6	6	6	8.87E+08	8.21E-03
			248.4779	174.4	402624.6	4	2	2.96E+08	1.37E-03
			248.4279	174.4	402705.6	4	4	7.39E+08	6.84E-03
			248.3703	0	402624.6	2	2	5.93E+08	5.48E-03
			248.3204	0	402705.6	2	4	1.48E+08	2.74E-03
N III	$2s^2 2p-2s2p(^3P^\circ)6p$	$^2P^\circ-^2P$	238.0737	116.3	420154.3	6	6	3.04E+08	2.58E-03
			238.1340	174.4	420106.1	4	2	1.02E+08	4.32E-04
			238.0930	174.4	420178.4	4	4	2.53E+08	2.15E-03
			238.0351	0	420106.1	2	2	2.02E+08	1.72E-03
			237.9941	0	420178.4	2	4	5.08E+07	8.63E-04
N III	$2s^2 2p-2s2p(^3P^\circ)7p$	$^2P^\circ-^2P$	233.6706	116.3	428069.0	6	6	2.53E+08	2.07E-03
			233.7152	174.4	428045.5	4	2	8.43E+07	3.45E-04
			233.6960	174.4	428080.8	4	4	2.10E+08	1.72E-03
			233.6200	0	428045.5	2	2	1.69E+08	1.38E-03
			233.6008	0	428080.8	2	4	4.22E+07	6.91E-04
N III	$2s^2 2p-2s2p(^3P^\circ)8p$	$^2P^\circ-^2P$	230.8370	116.3	433322.5	6	6	1.70E+08	1.36E-03
			230.8819	174.4	433296.2	4	2	5.68E+07	2.27E-04
			230.8609	174.4	433335.6	4	4	1.41E+08	1.13E-03
			230.7890	0	433296.2	2	2	1.13E+08	9.06E-04
			230.7680	0	433335.6	2	4	2.84E+07	4.53E-04
N IV	$2s^2-2s2p$	$^1S-^1P^\circ$	765.1467	0	130693.9	1	3	2.34E+09	6.16E-01
N IV	$2s^2-2s3p$	$^1S-^1P^\circ$	247.2051	0	404522.4	1	3	1.19E+10	3.27E-01
N IV	$2s^2-2p3s$	$^1S-^1P^\circ$	211.4034	0	473029.3	1	3	2.25E+08	4.52E-03
N IV	$2s^2-2s4p$	$^1S-^1P^\circ$	197.2278	0	507027.9	1	3	6.00E+09	1.05E-01
N IV	$2s^2-2p3d$	$^1S-^1P^\circ$	192.8229	0	518610.5	1	3	3.58E+08	5.98E-03
N IV	$2s^2-2s5p$	$^1S-^1P^\circ$	181.7413	0	550232.6	1	3	2.81E+09	4.17E-02
N IV	$2s^2-2s6p$	$^1S-^1P^\circ$	174.6020	0	572731.1	1	3	1.69E+09	2.32E-02
N IV	$2s^2-2p4s$	$^1S-^1P^\circ$	172.1711	0	580817.5	1	3	5.87E+06	7.82E-05
N IV	$2s^2-2s7p$	$^1S-^1P^\circ$	170.0740	0	587979.4	1	3	1.01E+09	1.31E-02
N IV	$2s^2-2s8p$	$^1S-^1P^\circ$	167.7090	0	596270.9	1	3	1.02E+09	1.29E-02
N IV	$2s^2-2p4d$	$^1S-^1P^\circ$	167.0737	0	598538.2	1	3	4.24E+08	5.32E-03
N IV	$2s^2-2s9p$	$^1S-^1P^\circ$	165.9450	0	602609.3	1	3	3.30E+08	4.09E-03
N IV	$2s^2-2s10p$	$^1S-^1P^\circ$	164.7940	0	606818.2	1	3	3.24E+08	3.96E-03
N V	$1s^2 2s-1s^2 2p$	$^2S-^2P^\circ$	1240.15	0	80635.7	2	6	3.40E+08	2.35E-01
			1242.80	0	80463.2	2	2	3.37E+08	7.80E-02
			1238.82	0	80721.9	2	4	3.41E+08	1.57E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N V	$1s^2 2s-1s^2 3p$	$2S-2P^o$	209.2853	0	477816.6	2	6	1.21E+10	2.38E-01
			209.3076	0	477765.7	2	2	1.21E+10	7.96E-02
			209.2742	0	477842.0	2	4	1.21E+10	1.59E-01
N V	$1s^2 2s-1s^2 4p$	$2S-2P^o$	162.5586	0	615162.9	2	6	5.77E+09	6.86E-02
			162.5644	0	615141.0	2	2	5.75E+09	2.28E-02
			162.5557	0	615173.8	2	4	5.77E+09	4.57E-02
N V	$1s^2 2s-1s^2 5p$	$2S-2P^o$	147.4250	0	678311.1	2	6	3.07E+09	3.00E-02
			147.4273	0	678300.4	2	2	3.07E+09	9.99E-03
			147.4238	0	678316.5	2	4	3.07E+09	2.00E-02
N V	$1s^2 2s-1s^2 6p$	$2S-2P^o$	140.3569	0	712469.5	2	6	1.79E+09	1.59E-02
			140.3581	0	712463.2	2	2	1.80E+09	5.31E-03
			140.3563	0	712472.6	2	4	1.79E+09	1.06E-02
N V	$1s^2 2s-1s^2 7p$	$2S-2P^o$	136.4243	0	733007.2	2	6	1.14E+09	9.56E-03
			136.4250	0	[733003.3]	2	2	1.14E+09	3.18E-03
			136.4239	0	[733009.2]	2	4	1.14E+09	6.38E-03
N V	$1s^2 2s-1s^2 8p$	$2S-2P^o$	133.9928	0	746308.6	2	6	7.68E+08	6.20E-03
			133.9933	0	[746306.0]	2	2	7.69E+08	2.07E-03
			133.9926	0	[746309.9]	2	4	7.67E+08	4.13E-03
N V	$1s^2 2s-1s^2 9p$	$2S-2P^o$	132.3779	0	755413.4	2	6	5.39E+08	4.25E-03
			132.3782	0	[755411.5]	2	2	5.40E+08	1.42E-03
			132.3777	0	[755414.3]	2	4	5.39E+08	2.83E-03
N V	$1s^2 2s-1s^2 10p$	$2S-2P^o$	131.2478	0	761917.6	2	6	3.94E+08	3.05E-03
			131.2480	0	[761916.3]	2	2	3.95E+08	1.02E-03
			131.2477	0	[761918.3]	2	4	3.93E+08	2.03E-03
N VI	$1s^2-1s2p$	$1S-1P^o$	28.787	0	3473800	1	3	1.81E+12	6.75E-01
N VI	$1s^2-1s3p$	$1S-1P^o$	24.900	0	4016000	1	3	5.16E+11	1.44E-01
N VI	$1s^2-1s4p$	$1S-1P^o$	23.771	0	4206800	1	3	2.15E+11	5.46E-02
N VII	$1s-2p$	$2S-2P^o$	24.7810	0	4035348.1	2	6	1.51E+12	4.16E-01
			24.7846	0	[4034761.2]	2	2	1.51E+12	1.39E-01
			24.7792	0	[4035641.6]	2	4	1.50E+12	2.77E-01
N VII	$1s-3p$	$2S-2P^o$	20.9098	0	4782437.4	2	6	4.02E+11	7.90E-02
			20.9106	0	[4782263.5]	2	2	4.01E+11	2.63E-02
			20.9095	0	[4782524.4]	2	4	4.02E+11	5.27E-02
N VII	$1s-4p$	$2S-2P^o$	19.8258	0	5043926.9	2	6	1.64E+11	2.90E-02
			19.8261	0	[5043853.5]	2	2	1.64E+11	9.67E-03
			19.8257	0	[5043963.5]	2	4	1.64E+11	1.93E-02
N VII	$1s-5p$	$2S-2P^o$	19.3613	0	5164954.6	2	6	8.24E+10	1.39E-02
			19.3614	0	[5164917.0]	2	2	8.27E+10	4.65E-03
			19.3612	0	[5164973.4]	2	4	8.27E+10	9.30E-03
N VII	$1s-6p$	$2S-2P^o$	19.1179	0	5230695.3	2	6	4.74E+10	7.80E-03
			19.1180	0	[5230673.5]	2	2	4.74E+10	2.60E-03
			19.1179	0	[5230706.1]	2	4	4.74E+10	5.20E-03
N VII	$1s-7p$	$2S-2P^o$	18.9741	0	5270333.4	2	6	2.98E+10	4.82E-03
			18.9742	0	[5270319.7]	2	2	2.96E+10	1.60E-03
			18.9741	0	[5270340.2]	2	4	2.97E+10	3.21E-03
N VII	$1s-8p$	$2S-2P^o$	18.8820	0	5296059.3	2	6	1.99E+10	3.19E-03
			18.8820	0	[5296050.1]	2	2	1.98E+10	1.06E-03
			18.8819	0	[5296063.8]	2	4	1.98E+10	2.12E-03
N VII	$1s-9p$	$2S-2P^o$	18.8193	0	5313696.4	2	6	1.39E+10	2.22E-03
			18.8193	0	[5313699.6]	2	4	1.39E+10	1.48E-03
			18.8193	0	[5313689.9]	2	2	1.39E+10	7.38E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
N VII	$1s-10p$	$^2S-^2P^o$	18.7747	0	5326311.8	2	6	1.01E+10	1.60E-03
			18.7747	0	[5326314.2]	2	4	1.01E+10	1.07E-03
			18.7747	0	[5326307.1]	2	2	1.01E+10	5.35E-04
O I	$2s^2 2p^4-2p^3(^4S^o)3s$	$^3P-^3S^o$	1303.4951	77.975	76794.798	9	3	5.92E+08	5.03E-02
			1306.0317	226.977	76794.798	1	3	6.54E+07	5.02E-02
			1304.8607	158.265	76794.798	3	3	1.97E+08	5.03E-02
			1302.1715	0	76794.798	5	3	3.30E+08	5.04E-02
O I	$2s^2 2p^4-2p^3(^4S^o)4s$	$^3P-^3S^o$	1040.0732	77.975	96225.049	9	3	1.67E+08	9.04E-03
			1041.6876	226.977	96225.049	1	3	1.85E+07	9.02E-03
			1040.9425	158.265	96225.049	3	3	5.56E+07	9.03E-03
			1039.2304	0	96225.049	5	3	9.31E+07	9.04E-03
O I	$2s^2 2p^4-2p^3(^4S^o)3d$	$^3P-^3D^o$	1026.5834	77.975	97488.476	9	15	7.14E+07	1.88E-02
			1028.1571	226.977	97488.378	1	3	3.95E+07	1.88E-02
			1027.4313	158.265	97488.378	3	3	2.97E+07	4.70E-03
			1027.4305	158.265	97488.448	3	5	5.35E+07	1.41E-02
			1025.7633	0	97488.378	5	3	1.99E+06	1.88E-04
			1025.7626	0	97488.448	5	5	1.79E+07	2.82E-03
			1025.7616	0	97488.538	5	7	7.15E+07	1.58E-02
O I	$2s^2 2p^4-2p^3(^2D^o)3s$	$^3P-^3D^o$	989.4576	77.975	101143.450	9	15	2.19E+08	5.35E-02
			990.8010	226.977	101155.422	1	3	1.21E+08	5.34E-02
			990.2043	158.265	101147.526	3	5	1.64E+08	4.01E-02
			990.1269	158.265	101155.422	3	3	9.12E+07	1.34E-02
			988.7734	0	101135.407	5	7	2.19E+08	4.49E-02
			988.6549	0	101147.526	5	5	5.48E+07	8.03E-03
			988.5778	0	101155.422	5	3	6.09E+06	5.35E-04
O I	$2s^2 2p^4-2p^3(^4S^o)5s$	$^3P-^3S^o$	977.1921	77.975	102411.995	9	3	6.85E+07	3.27E-03
			978.6170	226.977	102411.995	1	3	7.57E+06	3.26E-03
			977.9594	158.265	102411.995	3	3	2.27E+07	3.26E-03
			976.4481	0	102411.995	5	3	3.81E+07	3.27E-03
O I	$2s^2 2p^4-2p^3(^4S^o)4d$	$^3P-^3D^o$	972.4746	77.975	102908.420	9	15	6.47E+07	1.53E-02
			973.8852	226.977	102908.489	1	3	3.59E+07	1.53E-02
			973.2343	158.265	102908.443	3	5	4.86E+07	1.15E-02
			973.2339	158.265	102908.489	3	3	2.70E+07	3.84E-03
			971.7382	0	102908.374	5	7	6.56E+07	1.30E-02
			971.7376	0	102908.443	5	5	1.63E+07	2.31E-03
			971.7371	0	102908.489	5	3	1.81E+06	1.54E-04
O I	$2s^2 2p^4-2p^3(^4S^o)6s$	$^3P-^3S^o$	951.5902	77.975	105165.232	9	3	3.45E+07	1.56E-03
			952.9413	226.977	105165.232	1	3	3.82E+06	1.56E-03
			952.3178	158.265	105165.232	3	3	1.15E+07	1.56E-03
			950.8846	0	105165.232	5	3	1.93E+07	1.57E-03
O I	$2s^2 2p^4-2p^3(^4S^o)5d$	$^3P-^3D^o$	949.3878	77.975	105409.008	9	15	2.78E+07	6.25E-03
			950.7327	226.977	105409.008	1	3	1.53E+07	6.24E-03
			950.1121	158.265	105409.008	3	5	2.07E+07	4.68E-03
			950.1121	158.265	105409.008	3	3	1.15E+07	1.56E-03
			948.6855	0	105409.008	5	7	2.77E+07	5.24E-03
			948.6855	0	105409.008	5	5	6.94E+06	9.37E-04
			948.6855	0	105409.008	5	3	7.72E+05	6.25E-05
O I	$2s^2 2p^4-2p^3(^4S^o)7s$	$^3P-^3S^o$	938.5269	77.975	106627.934	9	3	1.97E+07	8.66E-04
			939.8412	226.977	106627.934	1	3	2.18E+06	8.65E-04
			939.2346	158.265	106627.934	3	3	6.54E+06	8.65E-04
			937.8405	0	106627.934	5	3	1.10E+07	8.67E-04
O I	$2s^2 2p^4-2p^3(^4S^o)6d$	$^3P-^3D^o$	937.3140	77.975	106765.803	9	15	1.64E+07	3.60E-03
			938.6249	226.977	106765.803	1	3	9.06E+06	3.59E-03
			938.0200	158.265	106765.803	3	5	1.23E+07	2.70E-03
			938.0200	158.265	106765.803	3	3	6.81E+06	8.99E-04
			936.6295	0	106765.803	5	7	1.64E+07	3.02E-03
			936.6295	0	106765.803	5	5	4.11E+06	5.40E-04
			936.6295	0	106765.803	5	3	4.56E+05	3.60E-05

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)8s$	$^3P-^3S^\circ$	930.9318	77.975	107497.224	9	3	1.23E+07	5.31E-04
			932.2249	226.977	107497.224	1	3	1.36E+06	5.30E-04
			931.6282	158.265	107497.224	3	3	4.08E+06	5.31E-04
			930.2566	0	107497.224	5	3	6.83E+06	5.32E-04
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)7d$	$^3P-^3D^\circ$	930.1910	77.975	107582.777	9	15	1.05E+07	2.27E-03
			931.4820	226.977	107582.777	1	3	5.82E+06	2.27E-03
			930.8862	158.265	107582.777	3	5	7.85E+06	1.70E-03
			930.8862	158.265	107582.777	3	3	4.36E+06	5.67E-04
			929.5168	0	107582.777	5	7	1.05E+07	1.90E-03
			929.5168	0	107582.777	5	5	2.63E+06	3.41E-04
			929.5168	0	107582.777	5	3	2.92E+05	2.27E-05
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)9s$	$^3P-^3S^\circ$	926.114	77.975	108056.0	9	3	8.17E+06	3.50E-04
			927.394	226.977	108056.0	1	3	9.02E+05	3.49E-04
			926.804	158.265	108056.0	3	3	2.72E+06	3.50E-04
			925.446	0	108056.0	5	3	4.54E+06	3.50E-04
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)8d$	$^3P-^3D^\circ$	925.617	77.975	108114.0	9	15	7.10E+06	1.52E-03
			926.896	226.977	108114.0	1	3	3.93E+06	1.52E-03
			926.306	158.265	108114.0	3	5	5.36E+06	1.15E-03
			926.306	158.265	108114.0	3	3	2.96E+06	3.81E-04
			924.950	0	108114.0	5	7	7.18E+06	1.29E-03
			924.950	0	108114.0	5	5	1.79E+06	2.29E-04
			924.950	0	108114.0	5	3	1.99E+05	1.53E-05
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)10s$	$^3P-^3S^\circ$	922.864	77.975	108436.3	9	3	5.69E+06	2.42E-04
			924.135	226.977	108436.3	1	3	6.30E+05	2.42E-04
			923.548	158.265	108436.3	3	3	1.89E+06	2.42E-04
			922.200	0	108436.3	5	3	3.16E+06	2.42E-04
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)9d$	$^3P-^3D^\circ$	922.520	77.975	108476.7	9	15	5.08E+06	1.08E-03
			923.790	226.977	108476.7	1	3	2.79E+06	1.07E-03
			923.204	158.265	108476.7	3	5	3.78E+06	8.05E-04
			923.204	158.265	108476.7	3	3	2.10E+06	2.68E-04
			921.857	0	108476.7	5	7	5.06E+06	9.03E-04
			921.857	0	108476.7	5	5	1.27E+06	1.62E-04
			921.857	0	108476.7	5	3	1.41E+05	1.08E-05
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)11s$	$^3P-^3S^\circ$	920.577	77.975	108705.5	9	3	4.13E+06	1.75E-04
			921.841	226.977	108705.5	1	3	4.58E+05	1.75E-04
			921.258	158.265	108705.5	3	3	1.38E+06	1.75E-04
			919.917	0	108705.5	5	3	2.31E+06	1.76E-04
O I	$2s^2 2p^4 - 2p^3(^4S^\circ)10d$	$^3P-^3D^\circ$	920.318	77.975	108736.1	9	15	3.70E+06	7.84E-04
			921.581	226.977	108736.1	1	3	2.05E+06	7.83E-04
			920.998	158.265	108736.1	3	5	2.77E+06	5.88E-04
			920.998	158.265	108736.1	3	3	1.54E+06	1.96E-04
			919.658	0	108736.1	5	7	3.71E+06	6.59E-04
			919.658	0	108736.1	5	5	9.31E+05	1.18E-04
			919.658	0	108736.1	5	3	1.03E+05	7.85E-06
O I	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P-^3P^\circ$	878.4390	77.975	113916.277	9	9	6.78E+08	7.84E-02
			879.5507	226.977	113921.391	1	3	2.25E+08	7.83E-02
			879.1001	158.265	113910.957	3	5	1.69E+08	3.26E-02
			879.0194	158.265	113921.391	3	3	1.69E+08	1.96E-02
			878.9720	158.265	113927.534	3	1	6.76E+08	2.61E-02
			877.8787	0	113910.957	5	5	5.10E+08	5.89E-02
			877.7983	0	113921.391	5	3	2.84E+08	1.97E-02
O I	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3P^\circ$	811.3693	77.975	123326.418	9	9	2.99E+07	2.95E-03
			812.1594	226.977	123355.512	1	3	9.94E+06	2.95E-03
			812.0936	158.265	123296.777	3	5	7.46E+06	1.23E-03
			811.7064	158.265	123355.512	3	3	7.47E+06	7.38E-04
			811.4968	158.265	123387.339	3	1	2.99E+07	9.83E-04
			811.0512	0	123296.777	5	5	2.25E+07	2.22E-03
			810.6650	0	123355.512	5	3	1.25E+07	7.38E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O I	$2s^2 2p^4 - 2s 2p^5$	$^3P - ^3P^o$	792.2276	77.975	126304.323	9	9	6.58E+08	6.19E-02
			792.9671	158.265	126266.896	3	5	1.64E+08	2.58E-02
			792.9381	226.977	126340.225	1	3	2.19E+08	6.18E-02
			792.5063	158.265	126340.225	3	3	1.65E+08	1.55E-02
			792.2330	158.265	126383.751	3	1	6.60E+08	2.07E-02
			791.9732	0	126266.896	5	5	4.94E+08	4.65E-02
			791.5136	0	126340.225	5	3	2.75E+08	1.55E-02
O I	$2s^2 2p^4 - 2p^3(^2D^o)4d$	$^3P - ^3P^o$	769.8421	77.975	129974.745	9	9	2.14E+08	1.90E-02
			770.6986	226.977	129979.384	1	3	7.11E+07	1.90E-02
			770.3464	158.265	129970.000	3	5	5.35E+07	7.93E-03
			770.2907	158.265	129979.384	3	3	5.35E+07	4.76E-03
			770.2600	158.265	129984.553	3	1	2.14E+08	6.35E-03
			769.4083	0	129970.000	5	5	1.61E+08	1.43E-02
			769.3528	0	129979.384	5	3	8.96E+07	4.77E-03
O I	$2s^2 2p^4 - 2p^3(^2D^o)5d$	$^3P - ^3P^o$	756.2292	77.975	132313.0	9	9	9.28E+07	7.96E-03
			757.0640	226.977	132316.2	1	3	3.08E+07	7.95E-03
			756.6996	158.265	132311.1	3	5	2.31E+07	3.31E-03
			756.6704	158.265	132316.2	3	3	2.31E+07	1.98E-03
			755.7945	0	132311.1	5	5	6.97E+07	5.97E-03
			755.7654	0	132316.2	5	3	3.87E+07	1.99E-03
				158.265		3	1	9.31E+07	2.66E-03
O I	$2s^2 2p^4 - 2p^3(^2D^o)6d$	$^3P - ^3P^o$	748.8073	77.975	133623.7	9	9	5.29E+07	4.45E-03
			749.6279	226.977	133626.5	1	3	1.76E+07	4.44E-03
			749.2672	158.265	133622.0	3	5	1.32E+07	1.85E-03
			749.2419	158.265	133626.5	3	3	1.32E+07	1.11E-03
			748.3798	0	133622.0	5	5	3.97E+07	3.33E-03
			748.3546	0	133626.5	5	3	2.20E+07	1.11E-03
				158.265		3	1	5.32E+07	1.49E-03
O I	$2s^2 2p^4 - 2p^3(^2D^o)7d$	$^3P - ^3P^o$	744.3504	77.975	134423.3	9	9	3.41E+07	2.83E-03
			745.1591	226.977	134426.5	1	3	1.13E+07	2.83E-03
			744.8061	158.265	134421.4	3	5	8.58E+06	1.19E-03
			744.7778	158.265	134426.5	3	3	8.53E+06	7.09E-04
			743.9292	0	134421.4	5	5	2.57E+07	2.13E-03
			743.9009	0	134426.5	5	3	1.42E+07	7.09E-04
				158.265		3	1	3.42E+07	9.48E-04
O I	$2s^2 2p^4 - 2p^3(^2D^o)8d$	$^3P - ^3P^o$	741.4709	77.975	134945.0	9	9	2.39E+07	1.97E-03
			742.2796	226.977	134947.1	1	3	7.95E+06	1.97E-03
			741.9194	158.265	134943.8	3	5	5.97E+06	8.21E-04
			741.9012	158.265	134947.1	3	3	5.96E+06	4.92E-04
			741.0492	0	134943.8	5	5	1.80E+07	1.48E-03
			741.0311	0	134947.1	5	3	9.98E+06	4.93E-04
				158.265		3	1	2.40E+07	6.59E-04
O I	$2s^2 2p^4 - 2p^3(^2D^o)9d$	$^3P - ^3P^o$	739.5023	77.975	135304.1	9	9	1.78E+07	1.46E-03
			740.3129	226.977	135305.0	1	3	5.88E+06	1.45E-03
			739.9447	158.265	135303.5	3	5	4.42E+06	6.05E-04
			739.9365	158.265	135305.0	3	3	4.42E+06	3.63E-04
			739.0792	0	135303.5	5	5	1.33E+07	1.09E-03
			739.0710	0	135305.0	5	3	7.39E+06	3.63E-04
				158.265		3	1	1.77E+07	4.85E-04
O I	$2s^2 2p^4 - 2p^3(^2D^o)10d$	$^3P - ^3P^o$	738.0998	77.975	135561.0	9	9	1.38E+07	1.13E-03
			738.9059	226.977	135562.2	1	3	4.60E+06	1.13E-03
			738.5413	158.265	135560.3	3	5	3.46E+06	4.71E-04
			738.5310	158.265	135562.2	3	3	3.45E+06	2.82E-04
			737.6791	0	135560.3	5	5	1.04E+07	8.48E-04
			737.6688	0	135562.2	5	3	5.76E+06	2.82E-04
				158.265		3	1	1.39E+07	3.78E-04
O II	$2s^2 2p^3 - 2s 2p^4$	$^4S^o - ^4P$	833.8019	0	119932.56	4	12	8.51E+08	2.66E-01
			834.4654	0	119837.21	4	6	8.43E+08	1.32E-01
			833.3303	0	120000.43	4	4	8.51E+08	8.86E-02
			832.7583	0	120082.86	4	2	8.54E+08	4.44E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O II	$2s^2 2p^3 - 2p^2(^3P)3s$	$4S^\circ - 4P$	539.3676	0	185402.301	4	12	9.94E+08	1.30E-01
			539.8540	0	185235.281	4	2	9.93E+08	2.17E-02
			539.5473	0	185340.577	4	4	9.97E+08	4.35E-02
			539.0861	0	185499.124	4	6	9.98E+08	6.52E-02
O II	$2s^2 2p^3 - 2p^2(^3P)3d$	$4S^\circ - 4P$	430.0882	0	232510.427	4	12	4.46E+09	3.71E-01
			430.1765	0	232462.724	4	6	4.47E+09	1.86E-01
			430.0410	0	232535.949	4	4	4.47E+09	1.24E-01
			429.9180	0	232602.492	4	2	4.46E+09	6.18E-02
O II	$2s^2 2p^3 - 2p^2(^3P)4s$	$4S^\circ - 4P$	418.7679	0	238795.77	4	12	1.85E+08	1.46E-02
			419.0633	0	238627.46	4	2	1.85E+08	2.44E-03
			418.8786	0	238732.65	4	4	1.86E+08	4.89E-03
			418.5958	0	238893.96	4	6	1.86E+08	7.34E-03
O II	$2s^2 2p^3 - 2p^2(^3P)4d$	$4S^\circ - 4P$	391.9614	0	255127.16	4	12	2.37E+09	1.64E-01
			391.9954	0	255105.01	4	6	2.38E+09	8.21E-02
			391.9380	0	255142.41	4	4	2.38E+09	5.47E-02
			391.9062	0	255163.08	4	2	2.37E+09	2.73E-02
O II	$2s^2 2p^3 - 2p^2(^3P)5s$	$4S^\circ - 4P$	387.7996	0	257865.16	4	12	5.60E+07	3.79E-03
			388.0545	0	257695.74	4	2	5.60E+07	6.32E-04
			387.8977	0	257799.93	4	4	5.59E+07	1.26E-03
			387.6493	0	257965.11	4	6	5.59E+07	1.89E-03
O II	$2s^2 2p^3 - 2p^2(^3P)5d$	$4S^\circ - 4P$	376.7242	0	265446.2	4	12	1.37E+09	8.72E-02
			376.7450	0	265431.5	4	6	1.37E+09	4.36E-02
			376.6930	0	265468.2	4	4	1.36E+09	2.90E-02
				0		4	2	1.38E+09	1.47E-02
O II	$2s^2 2p^3 - 2p^2(^3P)6s$	$4S^\circ - 4P$	374.7153	0	266869.3	4	12	2.23E+07	1.41E-03
			374.9559	0	266698.0	4	2	2.23E+07	2.35E-04
			374.8098	0	266802.0	4	4	2.23E+07	4.69E-04
			374.5722	0	266971.23	4	6	2.23E+07	7.04E-04
O III	$2s^2 2p^2 - 2s2p^3$	$3P - 3D^\circ$	834.4920	207.823	120041.2	9	15	6.15E+08	1.07E-01
			835.2891	306.174	120025.2	5	7	6.10E+08	8.94E-02
			835.0924	306.174	120053.4	5	5	1.53E+08	1.60E-02
			835.0589	306.174	120058.2	5	3	1.71E+07	1.07E-03
			833.7487	113.178	120053.4	3	5	4.61E+08	8.00E-02
			833.7153	113.178	120058.2	3	3	2.55E+08	2.66E-02
			832.9294	0	120058.2	1	3	3.43E+08	1.07E-01
O III	$2s^2 2p^2 - 2s2p^3$	$3P - 3P^\circ$	703.3594	207.823	142382.7	9	9	1.85E+09	1.37E-01
			703.8545	306.174	142381.0	5	5	1.37E+09	1.02E-01
			703.8505	306.174	142381.8	5	3	7.65E+08	3.41E-02
			702.8996	113.178	142381.0	3	5	4.62E+08	5.70E-02
			702.8957	113.178	142381.8	3	3	4.62E+08	3.42E-02
			702.8379	113.178	142393.5	3	1	1.85E+09	4.56E-02
			702.3370	0	142381.8	1	3	6.17E+08	1.37E-01
O III	$2s^2 2p^2 - 2s2p^3$	$3P - 3S^\circ$	507.9239	207.823	197087.7	9	3	1.43E+10	1.85E-01
			508.1778	306.174	197087.7	5	3	7.96E+09	1.85E-01
			507.6799	113.178	197087.7	3	3	4.79E+09	1.85E-01
			507.3883	0	197087.7	1	3	1.60E+09	1.85E-01
O III	$2s^2 2p^2 - 2s^2 2p3s$	$3P - 3P^\circ$	374.1131	207.823	267506.67	9	9	3.96E+09	8.31E-02
			374.4324	306.174	267377.11	5	3	1.64E+09	2.07E-02
			374.3278	113.178	267258.71	3	1	3.94E+09	2.76E-02
			374.1620	113.178	267377.11	3	3	9.91E+08	2.08E-02
			374.0725	306.174	267634.00	5	5	2.97E+09	6.23E-02
			374.0036	0	267377.11	1	3	1.32E+09	8.31E-02
			373.8027	113.178	267634.00	3	5	9.94E+08	3.47E-02
O III	$2s^2 2p^2 - 2s^2 2p3d$	$3P - 3D^\circ$	305.7214	207.823	327302.96	9	15	2.01E+10	4.70E-01
			305.8824	306.174	327229.25	5	3	5.58E+08	4.70E-03
			305.8365	306.174	327278.30	5	5	5.03E+09	7.06E-02
			305.7674	306.174	327352.17	5	7	2.01E+10	3.95E-01
			305.7019	113.178	327229.25	3	3	8.42E+09	1.18E-01
			305.6561	113.178	327278.30	3	5	1.51E+10	3.52E-01
			305.5962	0	327229.25	1	3	1.12E+10	4.70E-01



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O III	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3P^o$	303.6565	207.823	329527.31	9	9	1.16E+10	1.60E-01
			303.8003	306.174	329469.80	5	5	8.67E+09	1.20E-01
			303.6950	306.174	329583.89	5	3	4.81E+09	3.99E-02
			303.6223	113.178	329469.80	3	5	2.89E+09	6.66E-02
			303.5171	113.178	329583.89	3	3	2.89E+09	3.99E-02
			303.4607	113.178	329645.14	3	1	1.16E+10	5.32E-02
			303.4129	0	329583.89	1	3	3.86E+09	1.60E-01
O III	$2s^2 2p^2 - 2s^2 2p4s$	$^3P - ^3P^o$	280.2877	207.823	356984.03	9	9	9.42E+08	1.11E-02
			280.4744	306.174	356844.98	5	3	3.91E+08	2.77E-03
			280.4081	113.178	356736.30	3	1	9.39E+08	3.69E-03
			280.3226	113.178	356844.98	3	3	2.35E+08	2.77E-03
			280.2605	306.174	357117.01	5	5	7.05E+08	8.30E-03
			280.2337	0	356844.98	1	3	3.14E+08	1.11E-02
			280.1090	113.178	357117.01	3	5	2.35E+08	4.61E-03
O III	$2s^2 2p^2 - 2s^2 2p^2(^4P)3p$	$^3P - ^3S^o$	275.4399	207.823	363263.38	9	3	3.67E+09	1.39E-02
			275.5146	306.174	363263.38	5	3	2.04E+09	1.39E-02
			275.3682	113.178	363263.38	3	3	1.22E+09	1.39E-02
			275.2824	0	363263.38	1	3	4.08E+08	1.39E-02
O III	$2s^2 2p^2 - 2s^2 2p^2(^4P)3p$	$^3P - ^3D^o$	267.0236	207.823	374706.57	9	15	6.62E+09	1.18E-01
			267.1900	306.174	374571.64	5	3	1.84E+08	1.18E-03
			267.1244	306.174	374663.52	5	5	1.66E+09	1.78E-02
			267.0523	113.178	374571.64	3	3	2.76E+09	2.95E-02
			267.0306	306.174	374795.14	5	7	6.63E+09	9.92E-02
			266.9868	113.178	374663.52	3	5	4.97E+09	8.86E-02
			266.9716	0	374571.64	1	3	3.68E+09	1.18E-01
O III	$2s^2 2p^2 - 2s^2 2p^2(^4P)3p$	$^3P - ^3P^o$	264.4067	207.823	378413.01	9	9	7.01E+09	7.35E-02
			264.4806	306.174	378405.68	5	5	5.26E+09	5.52E-02
			264.4721	306.174	378417.84	5	3	2.92E+09	1.84E-02
			264.3457	113.178	378405.68	3	5	1.76E+09	3.07E-02
			264.3372	113.178	378417.84	3	3	1.76E+09	1.84E-02
			264.3251	113.178	378435.16	3	1	7.05E+09	2.46E-02
			264.2582	0	378417.84	1	3	2.34E+09	7.36E-02
O III	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3D^o$	263.7814	207.823	379309.59	9	15	5.98E+09	1.04E-01
			263.9073	306.174	379227.15	5	3	1.66E+08	1.04E-03
			263.8614	306.174	379293.03	5	5	1.49E+09	1.56E-02
			263.8170	306.174	379356.75	5	7	5.97E+09	8.72E-02
			263.7729	113.178	379227.15	3	3	2.48E+09	2.59E-02
			263.7271	113.178	379293.03	3	5	4.48E+09	7.78E-02
			263.6942	0	379227.15	1	3	3.33E+09	1.04E-01
O III	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3P^o$	262.8080	207.823	380713.70	9	9	1.05E+09	1.09E-02
			262.8809	306.174	380706.51	5	5	7.87E+08	8.15E-03
			262.8731	306.174	380717.92	5	3	4.36E+08	2.71E-03
			262.7476	113.178	380706.51	3	5	2.63E+08	4.53E-03
			262.7398	113.178	380717.92	3	3	2.62E+08	2.71E-03
			262.7266	113.178	380737.00	3	1	1.05E+09	3.63E-03
			262.6617	0	380717.92	1	3	3.51E+08	1.09E-02
O III	$2s^2 2p^2 - 2s^2 2p5s$	$^3P - ^3P^o$	255.1916	207.823	392070.20	9	9	7.05E+08	6.88E-03
			255.3550	306.174	391917.80	5	3	2.93E+08	1.72E-03
			255.2860	113.178	391830.76	3	1	7.03E+08	2.29E-03
			255.2293	113.178	391917.80	3	3	1.76E+08	1.72E-03
			255.1649	306.174	392209.53	5	5	5.29E+08	5.16E-03
			255.1555	0	391917.80	1	3	2.35E+08	6.88E-03
			255.0394	113.178	392209.53	3	5	1.77E+08	2.87E-03
O III	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3D^o$	248.6023	207.823	402456.6	9	15	4.30E+09	6.64E-02
			248.7272	306.174	402353.0	5	3	1.19E+08	6.64E-04
			248.6911	306.174	402411.5	5	5	1.08E+09	9.97E-03
			248.6158	306.174	402533.3	5	7	4.30E+09	5.58E-02
			248.6079	113.178	402353.0	3	3	1.79E+09	1.66E-02
			248.5718	113.178	402411.5	3	5	3.23E+09	4.98E-02
			248.5380	0	402353.0	1	3	2.39E+09	6.64E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O III	$2s^2 2p^2 - 2s^2 2p6s$	$^3P - ^3P^o$	244.4503	207.823	409288.9	9	9	3.24E+08	2.90E-03
			244.6067	306.174	409125.7	5	3	1.35E+08	7.25E-04
			244.5350	113.178	409052.6	3	1	3.24E+08	9.67E-04
			244.4913	113.178	409125.7	3	3	8.09E+07	7.25E-04
			244.4237	0	409125.7	1	3	1.08E+08	2.90E-03
			244.4223	306.174	409434.1	5	5	2.43E+08	2.18E-03
			244.3071	113.178	409434.1	3	5	8.11E+07	1.21E-03
O III	$2s^2 2p^2 - 2s^2 2p6d$	$^3P - ^3D^o$	240.980	207.823	415180	9	15	2.56E+09	3.72E-02
			241.037	306.174	415180	5	7	2.57E+09	3.13E-02
			241.037	306.174	415180	5	5	6.41E+08	5.58E-03
			241.037	306.174	415180	5	3	7.12E+07	3.72E-04
			240.925	113.178	415180	3	5	1.92E+09	2.79E-02
			240.925	113.178	415180	3	3	1.07E+09	9.32E-03
			240.859	0	415180	1	3	1.43E+09	3.72E-02
O III	$2s^2 2p^2 - 2s2p^2(^4P)4p$	$^3P - ^3S^o$	228.9353	207.823	437012.5	9	3	1.83E+09	4.79E-03
			228.9868	306.174	437012.5	5	3	1.02E+09	4.79E-03
			228.8857	113.178	437012.5	3	3	6.10E+08	4.79E-03
			228.8264	0	437012.5	1	3	2.03E+08	4.79E-03
O III	$2s^2 2p^2 - 2s2p^2(^4P)4p$	$^3P - ^3D^o$	225.984	207.823	442718	9	15	3.03E+07	3.87E-04
			226.034	306.174	442718	5	7	3.03E+07	3.25E-04
				113.178		3	5	2.19E+07	2.79E-04
				0		1	3	1.62E+07	3.72E-04
				306.174		5	5	7.29E+06	5.58E-05
				113.178		3	3	1.22E+07	9.31E-05
				306.174		5	3	8.10E+05	3.72E-06
O IV	$2s^2 2p - 2s2p^2$	$^2P^o - ^2D$	789.3620	257.3	126941.9	6	10	7.07E+08	1.10E-01
			790.1990	385.9	126936.3	4	6	7.07E+08	9.93E-02
			790.1122	385.9	126950.2	4	4	1.18E+08	1.10E-02
			787.7105	0	126950.2	2	4	5.97E+08	1.11E-01
O IV	$2s^2 2p - 2s2p^2$	$^2P^o - ^2S$	609.3506	257.3	164366.4	6	2	3.61E+09	6.69E-02
			609.8286	385.9	164366.4	4	2	2.40E+09	6.69E-02
			608.3968	0	164366.4	2	2	1.21E+09	6.70E-02
O IV	$2s^2 2p - 2s2p^2$	$^2P^o - ^2P$	554.3674	257.3	180643.1	6	6	7.27E+09	3.35E-01
			555.2628	385.9	180480.8	4	2	2.41E+09	5.58E-02
			554.5134	385.9	180724.2	4	4	6.05E+09	2.79E-01
			554.0756	0	180480.8	2	2	4.87E+09	2.24E-01
			553.3293	0	180724.2	2	4	1.22E+09	1.12E-01
O IV	$2s^2 2p - 2s^2 3s$	$^2P^o - ^2S$	279.8322	257.3	357614.3	6	2	8.02E+09	3.14E-02
			279.9330	385.9	357614.3	4	2	5.35E+09	3.14E-02
			279.6309	0	357614.3	2	2	2.68E+09	3.14E-02
O IV	$2s^2 2p - 2s^2 3d$	$^2P^o - ^2D$	238.5003	257.3	419543.9	6	10	3.55E+10	5.04E-01
			238.5792	385.9	419533.9	4	4	5.91E+09	5.04E-02
			238.5697	385.9	419550.6	4	6	3.55E+10	4.54E-01
			238.3598	0	419533.9	2	4	2.96E+10	5.04E-01
O IV	$2s^2 2p - 2s2p(^3P^o)3p$	$^2P^o - ^2P$	214.1103	257.3	467306.4	6	6	1.09E+10	7.52E-02
			214.2046	385.9	467229.3	4	2	3.63E+09	1.25E-02
			214.1516	385.9	467344.9	4	4	9.10E+09	6.26E-02
			214.0277	0	467229.3	2	2	7.29E+09	5.01E-02
			213.9747	0	467344.9	2	4	1.83E+09	2.51E-02
O IV	$2s^2 2p - 2s2p(^3P^o)3p$	$^2P^o - ^2D$	207.2272	257.3	482819.4	6	10	1.17E+10	1.26E-01
			207.3483	385.9	482666.1	4	4	1.95E+09	1.26E-02
			207.2386	385.9	482921.6	4	6	1.17E+10	1.13E-01
			207.1826	0	482666.1	2	4	9.79E+09	1.26E-01
O IV	$2s^2 2p - 2s^2 4s$	$^2P^o - ^2S$	205.9459	257.3	485821.7	6	2	1.07E+09	2.26E-03
			206.0005	385.9	485821.7	4	2	7.10E+08	2.26E-03
			205.8368	0	485821.7	2	2	3.56E+08	2.26E-03
O IV	$2s^2 2p - 2s2p(^3P^o)3p$	$^2P^o - ^2S$	202.9906	257.3	492890.9	6	2	1.06E+10	2.18E-02
			203.0436	385.9	492890.9	4	2	7.05E+09	2.18E-02
			202.8847	0	492890.9	2	2	3.53E+09	2.18E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O IV	$2s^2 2p-2s^2 4d$	$^2P^\circ-^2D$	195.9574	257.3	510572.3	6	10	1.19E+10	1.14E-01
			196.0078	385.9	510569.7	4	4	2.00E+09	1.15E-02
			196.0061	385.9	510574.1	4	6	1.19E+10	1.03E-01
			195.8596	0	510569.7	2	4	9.91E+09	1.14E-01
O IV	$2s^2 2p-2s^2 5s$	$^2P^\circ-^2S$	185.491	257.3	539368	6	2	3.18E+09	5.46E-03
			185.535	385.9	539368	4	2	2.12E+09	5.46E-03
			185.402	0	539368	2	2	1.06E+09	5.46E-03
O IV	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2D$	182.787	257.3	547343	6	10	2.10E+09	1.75E-02
			182.835	385.9	547326	4	4	3.49E+08	1.75E-03
			182.826	385.9	547355	4	6	2.10E+09	1.58E-02
			182.706	0	547326	2	4	1.75E+09	1.75E-02
O IV	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2P$	181.958	257.3	549834	6	6	3.14E+09	1.56E-02
			182.015	385.9	549792	4	2	1.05E+09	2.60E-03
			181.994	385.9	549855	4	4	2.62E+09	1.30E-02
			181.887	0	549792	2	2	2.10E+09	1.04E-02
			181.866	0	549855	2	4	5.25E+08	5.21E-03
O IV	$2s^2 2p-2s^2 5d$	$^2P^\circ-^2D$	181.2336	257.3	552031.2	6	10	5.98E+09	4.91E-02
			181.2764	385.9	552029.6	4	4	9.97E+08	4.91E-03
			181.2755	385.9	552032.3	4	6	5.98E+09	4.42E-02
			181.1497	0	552029.6	2	4	4.99E+09	4.91E-02
O IV	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2S$	180.439	257.3	554461	6	2	4.23E+09	6.89E-03
			180.481	385.9	554461	4	2	2.82E+09	6.89E-03
			180.355	0	554461	2	2	1.41E+09	6.89E-03
O IV	$2s^2 2p-2s^2 6d$	$^2P^\circ-^2D$	174.1822	257.3	574368.7	6	10	3.80E+09	2.88E-02
			174.2212	385.9	574368.7	4	6	3.79E+09	2.59E-02
			174.2212	385.9	574368.7	4	4	6.33E+08	2.88E-03
			174.1042	0	574368.7	2	4	3.17E+09	2.88E-02
O IV	$2s^2 2p-2s2p(^3P^\circ)4p$	$^2P^\circ-^2P$	173.895	257.3	575317	6	6	4.57E+09	2.07E-02
			173.969	385.9	575202	4	2	1.52E+09	3.44E-03
			173.916	385.9	575375	4	4	3.79E+09	1.72E-02
			173.852	0	575202	2	2	3.05E+09	1.38E-02
			173.800	0	575375	2	4	7.63E+08	6.91E-03
O IV	$2s^2 2p-2s2p(^3P^\circ)4p$	$^2P^\circ-^2D$	171.111	257.3	584673	6	10	4.93E+09	3.61E-02
			171.187	385.9	584541	4	4	8.22E+08	3.61E-03
			171.123	385.9	584761	4	6	4.94E+09	3.25E-02
			171.074	0	584541	2	4	4.11E+09	3.61E-02
O IV	$2s^2 2p-2s2p(^3P^\circ)4p$	$^2P^\circ-^2S$	169.546	257.3	590069	6	2	2.03E+09	2.92E-03
			169.583	385.9	590069	4	2	1.35E+09	2.92E-03
			169.472	0	590069	2	2	6.80E+08	2.93E-03
O IV	$2s^2 2p-2p^2(^3P)3s$	$^2P^\circ-^2P$	168.289	257.3	594472	6	6	5.93E+08	2.52E-03
			168.363	385.9	594340	4	2	1.97E+08	4.19E-04
			168.307	385.9	594538	4	4	4.94E+08	2.10E-03
			168.254	0	594340	2	2	3.96E+08	1.68E-03
			168.198	0	594538	2	4	9.89E+07	8.39E-04
O IV	$2s^2 2p-2s2p(^3P^\circ)4f$	$^2P^\circ-^2D$	167.6567	257.3	596714.3	6	10	8.03E+07	5.64E-04
			167.7086	385.9	596658.3	4	6	8.03E+07	5.08E-04
			167.6692	385.9	596798.2	4	4	1.34E+07	5.64E-05
			167.5608	0	596798.2	2	4	6.71E+07	5.65E-04
O IV	$2s^2 2p-2p^2(^1D)3s$	$^2P^\circ-^2D$	166.710	257.3	600100	6	10	3.02E+08	2.10E-03
			166.748	385.9	600092	4	4	5.04E+07	2.10E-04
			166.744	385.9	600106	4	6	3.02E+08	1.89E-03
			166.641	0	600092	2	4	2.52E+08	2.10E-03
O IV	$2s^2 2p-2s2p(^3P^\circ)5p$	$^2P^\circ-^2P$	159.164	257.3	628539	6	6	2.79E+09	1.06E-02
			159.197	385.9	628539	4	4	2.33E+09	8.85E-03
			159.099	0	628539	2	4	4.66E+08	3.54E-03
				0		2	2	1.86E+09	7.07E-03
				385.9		4	2	9.32E+08	1.77E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O IV	$2s^2 2p-2p^2(^3P)3d$	$^2P^o-^2P$	158.171	257.3	632483	6	6	1.13E+05	4.25E-07
			158.218	385.9	632426	4	4	9.43E+04	3.54E-07
			158.175	385.9	632597	4	2	3.78E+04	7.09E-08
			158.121	0	632426	2	4	1.89E+04	1.42E-07
			158.079	0	632597	2	2	7.55E+04	2.83E-07
O IV	$2s^2 2p-2p^2(^1D)3d$	$^2P^o-^2P$	151.575	257.3	659998	6	6	3.66E+06	1.26E-05
			151.604	385.9	659998	4	4	3.05E+06	1.05E-05
			151.604	385.9	659998	4	2	1.22E+06	2.11E-06
			151.516	0	659998	2	2	2.46E+06	8.45E-06
			151.516	0	659998	2	4	6.13E+05	4.22E-06
O V	$2s^2-2s2p$	$^1S-^1P^o$	629.7320	0	158797.7	1	3	2.89E+09	5.15E-01
O V	$2s^2-2s3p$	$^1S-^1P^o$	172.1689	0	580824.9	1	3	2.96E+10	3.95E-01
O V	$2s^2-2p3s$	$^1S-^1P^o$	150.4923	0	664485.9	1	3	1.48E+06	1.51E-05
O V	$2s^2-2p3d$	$^1S-^1P^o$	139.0289	0	719274.9	1	3	6.66E+09	5.79E-02
O V	$2s^2-2s4p$	$^1S-^1P^o$	135.5232	0	737880.8	1	3	9.41E+09	7.77E-02
O V	$2s^2-2s5p$	$^1S-^1P^o$	124.616	0	802466	1	3	7.16E+09	5.00E-02
O V	$2s^2-2p4s$	$^1S-^1P^o$	121.318	0	824282	1	3	2.96E+07	1.96E-04
O V	$2s^2-2s6p$	$^1S-^1P^o$	119.102	0	839616	1	3	4.62E+09	2.95E-02
O V	$2s^2-2p4d$	$^1S-^1P^o$	118.000	0	847460	1	3	9.07E+08	5.68E-03
O V	$2s^2-2s7p$	$^1S-^1P^o$	116.161	0	860874	1	3	2.29E+09	1.39E-02
O V	$2s^2-2s8p$	$^1S-^1P^o$	114.358	0	874447	1	3	1.73E+09	1.02E-02
O VI	$1s^2 2s-1s^2 2p$	$^2S-^2P^o$	1033.8160	0	96729.010	2	6	4.14E+08	1.99E-01
			1037.6167	0	96374.702	2	2	4.09E+08	6.61E-02
			1031.9261	0	96906.164	2	4	4.17E+08	1.33E-01
O VI	$1s^2 2s-1s^2 3p$	$^2S-^2P^o$	150.1011	0	666217.6	2	6	2.62E+10	2.65E-01
			150.1246	0	666113.2	2	2	2.62E+10	8.84E-02
			150.0893	0	666269.8	2	4	2.62E+10	1.77E-01
O VI	$1s^2 2s-1s^2 4p$	$^2S-^2P^o$	115.8243	0	863376.4	2	6	1.23E+10	7.41E-02
			115.8301	0	863333.8	2	2	1.23E+10	2.47E-02
			115.8215	0	863397.7	2	4	1.23E+10	4.94E-02
O VI	$1s^2 2s-1s^2 5p$	$^2S-^2P^o$	104.8130	0	954080	2	6	6.48E+09	3.20E-02
			104.8130	0	954080	2	4	6.47E+09	2.13E-02
			104.8130	0	954080	2	2	6.44E+09	1.06E-02
O VI	$1s^2 2s-1s^2 6p$	$^2S-^2P^o$	99.688	0	1003130	2	6	3.78E+09	1.69E-02
			99.688	0	1003130	2	4	3.79E+09	1.13E-02
			99.688	0	1003130	2	2	3.79E+09	5.64E-03
O VI	$1s^2 2s-1s^2 7p$	$^2S-^2P^o$	96.840	0	1032630	2	6	2.39E+09	1.01E-02
			96.840	0	1032630	2	4	2.40E+09	6.74E-03
			96.840	0	1032630	2	2	2.40E+09	3.37E-03
O VI	$1s^2 2s-1s^2 8p$	$^2S-^2P^o$	95.0820	0	1051724	2	6	1.61E+09	6.56E-03
			95.0820	0	1051724	2	4	1.61E+09	4.37E-03
			95.0820	0	1051724	2	2	1.61E+09	2.18E-03
O VI	$1s^2 2s-1s^2 9p$	$^2S-^2P^o$	93.9150	0	1064793	2	6	1.13E+09	4.48E-03
			93.9150	0	1064793	2	4	1.13E+09	2.99E-03
			93.9150	0	1064793	2	2	1.13E+09	1.49E-03
O VI	$1s^2 2s-1s^2 10p$	$^2S-^2P^o$	93.0300	0	1074922	2	6	8.30E+08	3.23E-03
			93.0300	0	[1074922]	2	4	8.25E+08	2.14E-03
			93.0300	0	[1074922]	2	2	8.25E+08	1.07E-03
O VII	$1s^2-1s2p$	$^1S-^1P^o$	21.6019	0	4629226	1	3	3.32E+12	6.96E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
O VII	$1s^2-1s3p$	$1S-1P^o$	18.6288	0	5368028	1	3	9.35E+11	1.46E-01
O VII	$1s^2-1s4p$	$1S-1P^o$	17.7680	0	5628095	1	3	3.89E+11	5.52E-02
O VII	$1s^2-1s5p$	$1S-1P^o$	17.3960	0	5748448	1	3	1.97E+11	2.68E-02
O VII	$1s^2-1s6p$	$1S-1P^o$	17.2000	0	5813953	1	3	1.13E+11	1.51E-02
O VII	$1s^2-1s7p$	$1S-1P^o$	17.0860	0	5852745	1	3	7.14E+10	9.37E-03
O VII	$1s^2-1s8p$	$1S-1P^o$	17.0092	0	[5879164]	1	3	4.78E+10	6.22E-03
O VII	$1s^2-1s9p$	$1S-1P^o$	16.9584	0	[5896766]	1	3	3.36E+10	4.34E-03
O VII	$1s^2-1s10p$	$1S-1P^o$	16.9223	0	[5909359]	1	3	2.44E+10	3.14E-03
O VIII	$1s-2p$	$2S-2P^o$	18.9689	0	5271783.5	2	6	2.57E+12	4.16E-01
			18.9725	0	[5270781.8]	2	2	2.58E+12	1.39E-01
			18.9671	0	[5272284.4]	2	4	2.57E+12	2.77E-01
O VIII	$1s-3p$	$2S-2P^o$	16.0059	0	6247696.6	2	6	6.86E+11	7.90E-02
			16.0067	0	[6247399.7]	2	2	6.85E+11	2.63E-02
			16.0055	0	[6247845.0]	2	4	6.86E+11	5.27E-02
O VIII	$1s-4p$	$2S-2P^o$	15.1762	0	6589280.1	2	6	2.80E+11	2.90E-02
			15.1765	0	[6589154.9]	2	2	2.80E+11	9.67E-03
			15.1760	0	[6589342.7]	2	4	2.79E+11	1.93E-02
O VIII	$1s-5p$	$2S-2P^o$	14.8206	0	6747376.7	2	6	1.41E+11	1.39E-02
			14.8207	0	[6747312.6]	2	2	1.41E+11	4.65E-03
			14.8205	0	[6747408.8]	2	4	1.41E+11	9.30E-03
O VIII	$1s-6p$	$2S-2P^o$	14.6343	0	6833251.7	2	6	8.10E+10	7.80E-03
			14.6344	0	[6833214.6]	2	2	8.10E+10	2.60E-03
			14.6343	0	[6833270.2]	2	4	8.10E+10	5.20E-03
O VIII	$1s-7p$	$2S-2P^o$	14.5243	0	6885029.1	2	6	5.08E+10	4.82E-03
			14.5243	0	[6885005.7]	2	2	5.06E+10	1.60E-03
			14.5242	0	[6885040.8]	2	4	5.07E+10	3.21E-03
O VIII	$1s-8p$	$2S-2P^o$	14.4537	0	6918633.3	2	6	3.39E+10	3.19E-03
			14.4538	0	[6918617.6]	2	2	3.38E+10	1.06E-03
			14.4537	0	[6918641.1]	2	4	3.38E+10	2.12E-03
O VIII	$1s-9p$	$2S-2P^o$	14.4058	0	6941671.4	2	6	2.38E+10	2.22E-03
			14.4058	0	[6941660.4]	2	2	2.37E+10	7.38E-04
			14.4057	0	[6941676.9]	2	4	2.38E+10	1.48E-03
O VIII	$1s-10p$	$2S-2P^o$	14.3716	0	6958150.0	2	6	1.72E+10	1.60E-03
			14.3717	0	[6958142.0]	2	2	1.73E+10	5.35E-04
			14.3716	0	[6958154.0]	2	4	1.73E+10	1.07E-03
F I	$2s^22p^5-2p^4(^3P)3s$	$2P^o-2P$	955.066	134.7	104839.5	6	6	6.92E+08	9.46E-02
			958.525	404.1	104731.0	2	4	1.14E+08	3.14E-02
			955.546	404.1	105056.3	2	2	4.61E+08	6.31E-02
			954.827	0	104731.0	4	4	5.77E+08	7.89E-02
			951.871	0	105056.3	4	2	2.33E+08	1.58E-02
F I	$2s^22p^5-2p^4(^1D)3s$	$2P^o-2D$	807.8410	134.7	123921.4	6	10	2.96E+08	4.82E-02
			809.5992	404.1	123922.0	2	4	2.45E+08	4.81E-02
			806.9654	0	123921.0	4	6	2.96E+08	4.34E-02
			806.9592	0	123922.0	4	4	4.95E+07	4.83E-03
F I	$2s^22p^5-2p^4(^3P)4s$	$2P^o-2P$	792.0954	134.7	126382.1	6	6	2.02E+08	1.90E-02
			794.4170	404.1	126282.6	2	4	3.33E+07	6.31E-03
			792.5370	404.1	126581.2	2	2	1.35E+08	1.27E-02
			791.8749	0	126282.6	4	4	1.68E+08	1.58E-02
			790.0069	0	126581.2	4	2	6.80E+07	3.18E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F I	$2s^2 2p^5 - 2p^4(^3P)3d$	$2P^o - ^2D$	781.0211	134.7	128172.2	6	10	1.28E+08	1.95E-02
			782.3763	404.1	128219.8	2	4	1.06E+08	1.94E-02
			780.3935	0	128140.5	4	6	1.29E+08	1.76E-02
			779.9106	0	128219.8	4	4	2.14E+07	1.95E-03
F I	$2s^2 2p^5 - 2p^4(^3P)3d$	$2P^o - ^2P$	778.1279	134.7	128648.3	6	6	4.67E+07	4.24E-03
			780.5419	404.1	128520.2	2	2	3.09E+07	2.82E-03
			779.3734	404.1	128712.3	2	4	7.74E+06	1.41E-03
			778.0877	0	128520.2	4	2	1.56E+07	7.06E-04
			776.9265	0	128712.3	4	4	3.91E+07	3.54E-03
F I	$2s^2 2p^5 - 2p^4(^3P)5s$	$2P^o - ^2P$	752.2268	134.7	133073.3	6	6	8.13E+07	6.90E-03
			754.1803	404.1	132998.4	2	4	1.35E+07	2.30E-03
			752.9035	404.1	133223.2	2	2	5.41E+07	4.60E-03
			751.8889	0	132998.4	4	4	6.80E+07	5.76E-03
			750.6197	0	133223.2	4	2	2.72E+07	1.15E-03
F I	$2s^2 2p^5 - 2p^4(^3P)4d$	$2P^o - ^2D$	749.2602	134.7	133599.7	6	10	6.87E+07	9.64E-03
			750.6395	404.1	133623.8	2	4	5.69E+07	9.62E-03
			748.5951	0	133583.6	4	6	6.90E+07	8.69E-03
			748.3694	0	133623.8	4	4	1.15E+07	9.65E-04
F I	$2s^2 2p^5 - 2p^4(^3P)4d$	$2P^o - ^2P$	746.8467	134.7	134031.0	6	6	2.73E+07	2.28E-03
			749.0284	404.1	133910.4	2	2	1.81E+07	1.52E-03
			748.0149	404.1	134091.3	2	4	4.54E+06	7.61E-04
			746.7680	0	133910.4	4	2	9.14E+06	3.82E-04
			745.7606	0	134091.3	4	4	2.29E+07	1.91E-03
F I	$2s^2 2p^5 - 2p^4(^3P)6s$	$2P^o - ^2P$	735.8715	134.7	136028.0	6	6	4.04E+07	3.28E-03
			737.6683	404.1	135966.4	2	4	6.68E+06	1.09E-03
			736.6639	404.1	136151.2	2	2	2.69E+07	2.19E-03
			735.4759	0	135966.4	4	4	3.39E+07	2.75E-03
			734.4775	0	136151.2	4	2	1.36E+07	5.49E-04
F I	$2s^2 2p^5 - 2p^4(^3P)5d$	$2P^o - ^2D$	735.4771	134.7	136100.9	6	10	3.90E+07	5.27E-03
			736.8669	404.1	136113.8	2	4	3.23E+07	5.26E-03
			734.7958	0	136092.2	4	6	3.90E+07	4.74E-03
			734.6793	0	136113.8	4	4	6.51E+06	5.27E-04
F I	$2s^2 2p^5 - 2p^4(^3P)5d$	$2P^o - ^2P$	733.1523	134.7	136532.0	6	6	1.59E+07	1.28E-03
			735.2078	404.1	136420.1	2	2	1.05E+07	8.52E-04
			734.3012	404.1	136588.0	2	4	2.63E+06	4.26E-04
			733.0300	0	136420.1	4	2	5.31E+06	2.14E-04
			732.1288	0	136588.0	4	4	1.33E+07	1.07E-03
F I	$2s^2 2p^5 - 2p^4(^3P)6d$	$2P^o - ^2D$	728.2197	134.7	137455.9	6	10	2.38E+07	3.15E-03
			729.6149	404.1	137462.7	2	4	1.97E+07	3.14E-03
			727.5302	0	137451.3	4	6	2.38E+07	2.83E-03
			727.4700	0	137462.7	4	4	3.97E+06	3.15E-04
F I	$2s^2 2p^5 - 2p^4(^1S)3s$	$2P^o - ^2S$	681.323	134.7	146908	6	2	8.41E+08	1.95E-02
			682.576	404.1	146908	2	2	2.79E+08	1.95E-02
			680.698	0	146908	4	2	5.61E+08	1.95E-02
F II	$2s^2 2p^4 - 2s2p^5$	$3P - ^3P^o$	606.8470	168.1	164954.29	9	9	3.21E+09	1.77E-01
			608.0621	341.0	164797.88	3	5	7.94E+08	7.34E-02
			607.4716	489.9	165106.66	1	3	1.06E+09	1.76E-01
			606.9226	341.0	165106.66	3	3	7.99E+08	4.41E-02
			606.8039	0	164797.88	5	5	2.39E+09	1.32E-01
			606.2877	341.0	165279.19	3	1	3.21E+09	5.89E-02
			605.6691	0	165106.66	5	3	1.34E+09	4.41E-02
F II	$2s^2 2p^4 - 2p^3(^4S^o)3s$	$3P - ^3S^o$	547.3565	168.1	182864.40	9	3	3.71E+09	5.55E-02
			548.3223	489.9	182864.40	1	3	4.10E+08	5.54E-02
			547.8750	341.0	182864.40	3	3	1.23E+09	5.54E-02
			546.8533	0	182864.40	5	3	2.06E+09	5.55E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F II	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P-^3D^\circ$	472.3401	168.1	211879.98	9	15	1.25E+09	6.97E-02
			473.0137	489.9	211900.26	1	3	6.92E+08	6.96E-02
			472.7100	341.0	211887.19	3	5	9.37E+08	5.23E-02
			472.6808	341.0	211900.26	3	3	5.22E+08	1.75E-02
			471.9962	0	211866.13	5	7	1.25E+09	5.86E-02
			471.9492	0	211887.19	5	5	3.11E+08	1.04E-02
			471.9201	0	211900.26	5	3	3.48E+07	6.97E-04
F II	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P-^3P^\circ$	435.9520	168.1	229551.15	9	9	1.23E+09	3.51E-02
			436.5632	489.9	229551.79	1	3	4.09E+08	3.51E-02
			436.2828	341.0	229550.11	3	5	3.09E+08	1.47E-02
			436.2796	341.0	229551.79	3	3	3.08E+08	8.79E-03
			436.2746	341.0	229554.45	3	1	1.23E+09	1.17E-02
			435.6347	0	229550.11	5	5	9.28E+08	2.64E-02
			435.6315	0	229551.79	5	3	5.15E+08	8.80E-03
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P-^3D^\circ$	431.2261	168.1	232065.00	9	15	2.09E+09	9.73E-02
			431.8285	489.9	232063.34	1	3	1.16E+09	9.71E-02
			431.5510	341.0	232063.34	3	3	8.70E+08	2.43E-02
			431.5494	341.0	232064.16	3	5	1.57E+09	7.29E-02
			430.9168	0	232063.34	5	3	5.83E+07	9.74E-04
			430.9153	0	232064.16	5	5	5.24E+08	1.46E-02
			430.9113	0	232066.32	5	7	2.10E+09	8.18E-02
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)4s$	$^3P-^3S^\circ$	422.3103	168.1	236960.83	9	3	1.19E+09	1.06E-02
			422.8850	489.9	236960.83	1	3	1.32E+08	1.06E-02
			422.6188	341.0	236960.83	3	3	3.96E+08	1.06E-02
			422.0107	0	236960.83	5	3	6.62E+08	1.06E-02
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)4d$	$^3P-^3D^\circ$	393.9370	168.1	254015.79	9	15	9.88E+08	3.83E-02
			394.4385	489.9	254014.83	1	3	5.46E+08	3.82E-02
			394.2070	341.0	254014.83	3	3	4.10E+08	9.56E-03
			394.2061	341.0	254015.40	3	5	7.39E+08	2.87E-02
			393.6778	0	254014.83	5	3	2.75E+07	3.83E-04
			393.6769	0	254015.40	5	5	2.47E+08	5.75E-03
			393.6752	0	254016.48	5	7	9.90E+08	3.22E-02
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)5s$	$^3P-^3S^\circ$	390.4811	168.1	256262.46	9	3	4.97E+08	3.79E-03
			390.9724	489.9	256262.46	1	3	5.50E+07	3.78E-03
			390.7449	341.0	256262.46	3	3	1.65E+08	3.78E-03
			390.2249	0	256262.46	5	3	2.77E+08	3.79E-03
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)5d$	$^3P-^3D^\circ$	378.9222	168.1	264074.54	9	15	2.42E+08	8.67E-03
			379.3803	489.9	264077.66	1	3	1.34E+08	8.66E-03
			379.1694	341.0	264075.35	3	5	1.81E+08	6.50E-03
			379.1661	341.0	264077.66	3	3	1.01E+08	2.17E-03
			378.6837	0	264072.62	5	7	2.42E+08	7.29E-03
			378.6798	0	264075.35	5	5	6.05E+07	1.30E-03
			378.6765	0	264077.66	5	3	6.73E+06	8.68E-05
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)6s$	$^3P-^3S^\circ$	377.0889	168.1	265357.56	9	3	1.66E+08	1.18E-03
			377.5470	489.9	265357.56	1	3	1.84E+07	1.18E-03
			377.3349	341.0	265357.56	3	3	5.53E+07	1.18E-03
			376.8500	0	265357.56	5	3	9.24E+07	1.18E-03
F II	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3D^\circ$	376.9009	168.1	265489.86	9	15	1.44E+09	5.12E-02
			377.3205	489.9	265516.57	1	3	7.98E+08	5.11E-02
			377.1345	341.0	265498.41	3	5	1.08E+09	3.84E-02
			377.1086	341.0	265516.57	3	3	6.00E+08	1.28E-02
			376.6871	0	265472.31	5	7	1.44E+09	4.30E-02
			376.6501	0	265498.41	5	5	3.62E+08	7.69E-03
			376.6243	0	265516.57	5	3	4.01E+07	5.12E-04
F II	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3S^\circ$	375.6680	168.1	266360.60	9	3	3.28E+09	2.31E-02
			376.1227	489.9	266360.60	1	3	3.61E+08	2.30E-02
			375.9122	341.0	266360.60	3	3	1.09E+09	2.30E-02
			375.4309	0	266360.60	5	3	1.82E+09	2.31E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F II	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3P^\circ$	375.5055	168.1	266475.78	9	9	3.25E+09	6.88E-02
			375.9274	489.9	266498.74	1	3	1.08E+09	6.87E-02
			375.7804	341.0	266453.88	3	5	8.11E+08	2.86E-02
			375.7170	341.0	266498.74	3	3	8.13E+08	1.72E-02
			375.6921	341.0	266516.43	3	1	3.25E+09	2.29E-02
			375.2995	0	266453.88	5	5	2.44E+09	5.16E-02
			375.2363	0	266498.74	5	3	1.36E+09	1.72E-02
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)6d^*$	$^3P - ^3D^\circ$	371.2079	168.1	269558.89	9	15	1.88E+08	6.46E-03
			371.6315	489.9	269573.64	1	3	1.04E+08	6.46E-03
			371.4394	341.0	269563.93	3	5	1.40E+08	4.84E-03
			371.4260	341.0	269573.64	3	3	7.83E+07	1.62E-03
			370.9901	0	269548.97	5	7	1.88E+08	5.43E-03
			370.9695	0	269563.93	5	5	4.70E+07	9.70E-04
			370.9562	0	269573.64	5	3	5.23E+06	6.47E-05
F II	$2s^2 2p^4 - 2p^3(^2D^\circ)4s^*$	$^3P - ^3D^\circ$	370.9654	168.1	269735.03	9	15	7.59E+08	2.61E-02
			371.4065	489.9	269736.69	1	3	4.19E+08	2.60E-02
			371.2023	341.0	269735.89	3	5	5.69E+08	1.96E-02
			371.2012	341.0	269736.69	3	3	3.16E+08	6.52E-03
			370.7360	0	269733.70	5	7	7.59E+08	2.19E-02
			370.7330	0	269735.89	5	5	1.90E+08	3.92E-03
			370.7319	0	269736.69	5	3	2.11E+07	2.61E-04
F II	$2s^2 2p^4 - 2p^3(^4S^\circ)7s$	$^3P - ^3S^\circ$	370.0885	168.1	270373.76	9	3	1.91E+08	1.31E-03
			370.5298	489.9	270373.76	1	3	2.12E+07	1.31E-03
			370.3254	341.0	270373.76	3	3	6.37E+07	1.31E-03
			369.8584	0	270373.76	5	3	1.06E+08	1.31E-03
F II	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3P^\circ$	353.6546	168.1	282929.86	9	9	1.53E+09	2.86E-02
			354.0793	489.9	282912.54	1	3	5.07E+08	2.86E-02
			353.9131	341.0	282896.27	3	1	1.52E+09	9.52E-03
			353.8927	341.0	282912.54	3	3	3.81E+08	7.15E-03
			353.8496	341.0	282946.97	3	5	3.80E+08	1.19E-02
			353.4661	0	282912.54	5	3	6.37E+08	7.16E-03
			353.4231	0	282946.97	5	5	1.15E+09	2.15E-02
F II	$2s^2 2p^4 - 2p^3(^2P^\circ)4s$	$^3P - ^3P^\circ$	348.9967	168.1	286703.75	9	9	1.22E+09	2.23E-02
			349.3862	489.9	286706.14	1	3	4.04E+08	2.22E-02
			349.2104	341.0	286701.28	3	5	3.05E+08	9.29E-03
			349.2045	341.0	286706.14	3	3	3.05E+08	5.57E-03
			349.2011	341.0	286708.93	3	1	1.22E+09	7.42E-03
			348.7951	0	286701.28	5	5	9.21E+08	1.68E-02
			348.7892	0	286706.14	5	3	5.09E+08	5.57E-03
F III	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$	657.4731	0	152097.5	4	12	1.29E+09	2.50E-01
			658.3291	0	151899.7	4	6	1.28E+09	1.25E-01
			656.8688	0	152237.4	4	4	1.29E+09	8.35E-02
			656.1211	0	152410.9	4	2	1.30E+09	4.18E-02
F III	$2s^2 2p^3 - 2p^2(^3P)3s$	$^4S^\circ - ^4P$	315.4124	0	317045.28	4	12	3.04E+09	1.36E-01
			315.7465	0	316709.81	4	2	3.01E+09	2.25E-02
			315.5361	0	316920.99	4	4	3.01E+09	4.50E-02
			315.2188	0	317239.97	4	6	3.03E+09	6.76E-02
F III	$2s^2 2p^3 - 2p^2(^3P)3d$	$^4S^\circ - ^4P$	255.8086	0	390917.34	4	12	2.30E+10	6.77E-01
			255.8627	0	390834.60	4	6	2.30E+10	3.38E-01
			255.7699	0	390976.35	4	4	2.29E+10	2.25E-01
			255.7234	0	391047.54	4	2	2.31E+10	1.13E-01
F III	$2s^2 2p^3 - 2p^2(^3P)4s$	$^4S^\circ - ^4P$	240.6608	0	415522.62	4	12	5.49E+08	1.43E-02
			240.8570	0	415184.12	4	2	5.47E+08	2.38E-03
			240.7350	0	415394.51	4	4	5.49E+08	4.77E-03
			240.5460	0	415720.86	4	6	5.49E+08	7.15E-03
F III	$2s^2 2p^3 - 2p^3(5SO)3p$	$^4S^\circ - ^4P$	230.1169	0	434561.65	4	12	6.59E+09	1.57E-01
			230.1238	0	434548.72	4	6	6.59E+09	7.85E-02
			230.1126	0	434569.80	4	4	6.59E+09	5.23E-02
			230.1050	0	434584.16	4	2	6.60E+09	2.62E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F III	$2s^2 2p^3 - 2p^2(^3P)4d$	$^4S^\circ - ^4P$	226.1249	0	442233.41	4	12	8.35E+09	1.92E-01
			226.1690	0	442147.19	4	6	8.33E+09	9.58E-02
			226.0938	0	442294.31	4	4	8.34E+09	6.39E-02
			226.0550	0	442370.28	4	2	8.35E+09	3.20E-02
F III	$2s^2 2p^3 - 2p^2(^3P)5s$	$^4S^\circ - ^4P$	220.7775	0	452944.71	4	12	3.98E+08	8.73E-03
			220.9564	0	452577.90	4	2	3.96E+08	1.45E-03
			220.8400	0	452816.60	4	4	3.97E+08	2.90E-03
			220.6763	0	453152.39	4	6	3.99E+08	4.37E-03
F III	$2s^2 2p^3 - 2p^2(^3P)5d$	$^4S^\circ - ^4P$	214.833	0	465478	4	12	5.40E+09	1.12E-01
			214.8624	0	465414.14	4	6	5.43E+09	5.64E-02
			214.804	0	465541	4	4	5.44E+09	3.76E-02
			214.804	0	465541	4	2	5.44E+09	1.88E-02
F III	$2s^2 2p^3 - 2p^2(^3P)6s$	$^4S^\circ - ^4P$	212.2238	0	471200.61	4	12	1.78E+08	3.60E-03
			212.3125	0	471003.82	4	4	1.78E+08	1.20E-03
			212.1648	0	471331.80	4	6	1.78E+08	1.80E-03
				0		4	2	1.79E+08	6.04E-04
F IV	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3D^\circ$	678.1794	415.8	147869.5	9	15	8.68E+08	9.97E-02
			679.2168	613.4	147841.8	5	7	8.63E+08	8.36E-02
			678.9996	613.4	147888.9	5	5	2.16E+08	1.49E-02
			678.9410	613.4	147901.6	5	3	2.40E+07	9.96E-04
			677.2145	225.2	147888.9	3	5	6.54E+08	7.49E-02
			677.1563	225.2	147901.6	3	3	3.64E+08	2.50E-02
			676.1252	0	147901.6	1	3	4.86E+08	1.00E-01
F IV	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3P^\circ$	571.9978	415.8	175241.7	9	9	2.47E+09	1.21E-01
			572.6603	613.4	175237.0	5	5	1.85E+09	9.11E-02
			572.6439	613.4	175242.0	5	3	1.03E+09	3.04E-02
			571.3900	225.2	175237.0	3	5	6.21E+08	5.07E-02
			571.3737	225.2	175242.0	3	3	6.23E+08	3.05E-02
			571.3016	225.2	175264.1	3	1	2.48E+09	4.05E-02
			570.6395	0	175242.0	1	3	8.33E+08	1.22E-01
F IV	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3S^\circ$	420.3776	415.8	238297.2	9	3	1.79E+10	1.58E-01
			420.7270	613.4	238297.2	5	3	9.92E+09	1.58E-01
			420.0410	225.2	238297.2	3	3	5.97E+09	1.58E-01
			419.6440	0	238297.2	1	3	1.99E+09	1.58E-01
F IV	$2s^2 2p^2 - 2s^2 2p3s$	$^3P - ^3P^\circ$	240.1081	415.8	416894.9	9	9	9.26E+09	8.00E-02
			240.3694	613.4	416639.8	5	3	3.85E+09	2.00E-02
			240.2737	225.2	416417.3	3	1	9.25E+09	2.67E-02
			240.1453	225.2	416639.8	3	3	2.31E+09	2.00E-02
			240.0787	613.4	417143.4	5	5	6.95E+09	6.01E-02
			240.0155	0	416639.8	1	3	3.09E+09	8.01E-02
			239.8552	225.2	417143.4	3	5	2.32E+09	3.34E-02
F IV	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3D^\circ$	201.1212	415.8	497628.4	9	15	5.82E+10	5.88E-01
			201.2607	613.4	497481.4	5	3	1.61E+09	5.88E-03
			201.2225	613.4	497575.6	5	5	1.45E+10	8.82E-02
			201.1604	613.4	497729.1	5	7	5.82E+10	4.94E-01
			201.1036	225.2	497481.4	3	3	2.42E+10	1.47E-01
			201.0655	225.2	497575.6	3	5	4.38E+10	4.42E-01
			201.0125	0	497481.4	1	3	3.24E+10	5.89E-01
F IV	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3P^\circ$	199.9675	415.8	500497.0	9	9	3.32E+10	1.99E-01
			200.0894	613.4	500390.1	5	5	2.48E+10	1.49E-01
			200.0045	613.4	500602.1	5	3	1.38E+10	4.96E-02
			199.9341	225.2	500390.1	3	5	8.29E+09	8.28E-02
			199.8494	225.2	500602.1	3	3	8.30E+09	4.97E-02
			199.8037	225.2	500716.5	3	1	3.32E+10	6.63E-02
			199.7594	0	500602.1	1	3	1.11E+10	1.99E-01
F IV	$2s^2 2p^2 - 2s2p^2(^4P)3p$	$^3P - ^3S^\circ$	187.171	415.8	534686	9	3	1.22E+10	2.14E-02
			187.240	613.4	534686	5	3	6.79E+09	2.14E-02
			187.104	225.2	534686	3	3	4.08E+09	2.14E-02
			187.026	0	534686	1	3	1.36E+09	2.14E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F IV	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3D^o$	181.564	415.8	551187	9	15	1.13E+10	9.34E-02
			181.718	613.4	550918	5	3	3.14E+08	9.33E-04
			181.658	613.4	551098	5	5	2.83E+09	1.40E-02
			181.589	225.2	550918	3	3	4.73E+09	2.34E-02
			181.570	613.4	551366	5	7	1.13E+10	7.84E-02
			181.530	225.2	551098	3	5	8.50E+09	7.00E-02
			181.515	0	550918	1	3	6.30E+09	9.34E-02
F IV	$2s^2 2p^2 - 2s 2p^2 4s^*$	$^3P - ^3P^o$	179.921	415.8	556217	9	9	3.59E+09	1.74E-02
			180.038	613.4	556051	5	3	1.50E+09	4.37E-03
			179.952	613.4	556316	5	5	2.70E+09	1.31E-02
			179.912	225.2	556051	3	3	9.01E+08	4.37E-03
			179.840	0	556051	1	3	1.20E+09	1.74E-02
			179.827	225.2	556316	3	5	9.02E+08	7.29E-03
				225.2		3	1	3.59E+09	5.81E-03
F IV	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p^*$	$^3P - ^3P^o$	178.672	415.8	560101	9	9	8.73E+09	4.18E-02
			178.805	613.4	559881	5	3	3.62E+09	1.04E-02
			178.724	225.2	559747	3	1	8.71E+09	1.39E-02
			178.681	225.2	559881	3	3	2.17E+09	1.04E-02
			178.670	613.4	560304	5	5	6.54E+09	3.13E-02
			178.609	0	559881	1	3	2.91E+09	4.18E-02
			178.546	225.2	560304	3	5	2.18E+09	1.74E-02
F IV	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3D^o$	169.820	415.8	589274	9	15	2.28E+10	1.64E-01
			169.925	613.4	589109	5	3	6.31E+08	1.64E-03
			169.902	613.4	589188	5	5	5.71E+09	2.47E-02
			169.839	613.4	589406	5	7	2.28E+10	1.38E-01
			169.813	225.2	589109	3	3	9.51E+09	4.11E-02
			169.790	225.2	589188	3	5	1.71E+10	1.23E-01
			169.748	0	589109	1	3	1.27E+10	1.64E-01
F IV	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3P^o$	169.580	415.8	590109	9	9	1.30E+10	5.59E-02
			169.661	613.4	590024	5	5	9.71E+09	4.19E-02
			169.610	613.4	590201	5	3	5.41E+09	1.40E-02
			169.549	225.2	590024	3	5	3.24E+09	2.33E-02
			169.498	225.2	590201	3	3	3.25E+09	1.40E-02
			169.481	225.2	590262	3	1	1.30E+10	1.86E-02
			169.434	0	590201	1	3	4.34E+09	5.60E-02
F IV	$2s^2 2p^2 - 2s^2 2p 5d$	$^3P - ^3D^o$	158.551	415.8	631126	9	15	1.21E+10	7.60E-02
			158.601	613.4	631126	5	7	1.21E+10	6.38E-02
				225.2		3	5	9.07E+09	5.70E-02
				0		1	3	6.72E+09	7.60E-02
				613.4		5	5	3.02E+09	1.14E-02
				225.2		3	3	5.04E+09	1.90E-02
				613.4		5	3	3.36E+08	7.60E-04
F IV	$2s^2 2p^2 - 2s^2 2p 5d$	$^3P - ^3P^o$	158.463	415.8	631479	9	9	6.99E+09	2.63E-02
			158.526	613.4	631426	5	5	5.26E+09	1.98E-02
			158.496	613.4	631546	5	3	2.91E+09	6.58E-03
			158.428	225.2	631426	3	5	1.75E+09	1.10E-02
			158.398	225.2	631546	3	3	1.75E+09	6.59E-03
			158.398	225.2	631546	3	1	7.01E+09	8.79E-03
			158.342	0	631546	1	3	2.33E+09	2.63E-02
F IV	$2s^2 2p^2 - 2s^2 2p 6d$	$^3P - ^3D^o$	153.095	415.8	653606	9	15	7.75E+09	4.54E-02
			153.141	613.4	653606	5	7	7.76E+09	3.82E-02
				225.2		3	5	5.82E+09	3.41E-02
				0		1	3	4.31E+09	4.54E-02
				613.4		5	5	1.94E+09	6.82E-03
				225.2		3	3	3.24E+09	1.14E-02
				613.4		5	3	2.15E+08	4.54E-04
F IV	$2s^2 2p^2 - 2s^2 2p 6d$	$^3P - ^3P^o$	153.050	415.8	653799	9	9	4.36E+09	1.53E-02
			153.102	613.4	653772	5	5	3.27E+09	1.15E-02
			153.088	613.4	653833	5	3	1.82E+09	3.83E-03
			153.011	225.2	653772	3	5	1.09E+09	6.40E-03
			152.997	225.2	653833	3	3	1.09E+09	3.84E-03
			152.997	225.2	653833	3	1	4.38E+09	5.12E-03
			152.944	0	653833	1	3	1.45E+09	1.53E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F IV	$2s^2 2p^2 - 2s 2p^2 (^4P) 4p$	$^3P - ^3D^o$	150.960	415.8	662843	9	15	6.97E+09	3.97E-02
			151.005	613.4	662843	5	7	6.96E+09	3.33E-02
				225.2		3	5	5.22E+09	2.97E-02
				0		1	3	3.86E+09	3.96E-02
				613.4		5	5	1.74E+09	5.93E-03
				225.2		3	3	2.89E+09	9.89E-03
				613.4		5	3	1.93E+08	3.96E-04
F IV	$2s^2 2p^2 - 2s 2p^2 (^4P) 4p$	$^3P - ^3P^o$	150.377	415.8	665409	9	9	7.23E+09	2.45E-02
			150.422	613.4	665409	5	5	5.39E+09	1.83E-02
			150.334	225.2	665409	3	5	1.81E+09	1.02E-02
				225.2		3	3	1.80E+09	6.11E-03
				613.4		5	3	3.00E+09	6.11E-03
				225.2		3	1	7.21E+09	8.15E-03
				0		1	3	2.40E+09	2.44E-02
F V	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2D$	656.222	497	152885	6	10	9.26E+08	9.96E-02
			657.333	746	152876	4	6	9.21E+08	8.95E-02
			657.237	746	152898	4	4	1.53E+08	9.94E-03
			654.031	0	152898	2	4	7.79E+08	9.99E-02
F V	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2S$	507.440	497	197565	6	2	4.45E+09	5.72E-02
			508.081	746	197565	4	2	2.96E+09	5.72E-02
			506.163	0	197565	2	2	1.49E+09	5.74E-02
F V	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2P$	465.777	497	215192	6	6	8.85E+09	2.88E-01
			466.995	746	214881	4	2	2.92E+09	4.78E-02
			465.979	746	215348	4	4	7.37E+09	2.40E-01
			465.374	0	214881	2	2	5.91E+09	1.92E-01
			464.365	0	215348	2	4	1.49E+09	9.63E-02
F V	$2s^2 2p - 2s^2 3s$	$^2P^o - ^2S$	190.747	497	524751	6	2	1.64E+10	2.99E-02
			190.838	746	524751	4	2	1.09E+10	2.98E-02
			190.567	0	524751	2	2	5.49E+09	2.99E-02
F V	$2s^2 2p - 2s^2 3d$	$^2P^o - ^2D$	166.112	497	602500	6	10	7.89E+10	5.44E-01
			166.187	746	602476	4	4	1.31E+10	5.44E-02
			166.176	746	602516	4	6	7.89E+10	4.90E-01
			165.982	0	602476	2	4	6.59E+10	5.44E-01
F V	$2s^2 2p - 2s 2p(^3P^o) 3p$	$^2P^o - ^2P$	152.471	497	656360	6	6	2.63E+10	9.16E-02
			152.564	746	656208	4	2	8.71E+09	1.52E-02
			152.511	746	656436	4	4	2.19E+10	7.63E-02
			152.391	0	656208	2	2	1.75E+10	6.11E-02
			152.338	0	656436	2	4	4.38E+09	3.05E-02
F V	$2s^2 2p - 2s 2p(^3P^o) 3p$	$^2P^o - ^2D$	147.988	497	676226	6	10	2.67E+10	1.46E-01
			148.107	746	675932	4	4	4.44E+09	1.46E-02
			148.000	746	676422	4	6	2.66E+10	1.31E-01
			147.944	0	675932	2	4	2.22E+10	1.46E-01
F V	$2s^2 2p - 2s 2p(^3P^o) 3p$	$^2P^o - ^2S$	145.495	497	687806	6	2	1.99E+10	2.10E-02
			145.548	746	687806	4	2	1.32E+10	2.10E-02
			145.390	0	687806	2	2	6.63E+09	2.10E-02
F V	$2s^2 2p - 2s^2 4s$	$^2P^o - ^2S$	140.363	497	712936	6	2	1.22E+10	1.20E-02
			140.412	746	712936	4	2	8.12E+09	1.20E-02
			140.265	0	712936	2	2	4.07E+09	1.20E-02
F V	$2s^2 2p - 2s^2 4d$	$^2P^o - ^2D$	134.494	497	744026	6	10	2.83E+10	1.28E-01
			134.542	746	744010	4	4	4.72E+09	1.28E-02
			134.537	746	744036	4	6	2.83E+10	1.15E-01
			134.407	0	744010	2	4	2.36E+10	1.28E-01
F V	$2s^2 2p - 2s 2p(^1P^o) 3p$	$^2P^o - ^2D$	133.167	497	751434	6	10	2.32E+09	1.03E-02
			133.216	746	751406	4	4	3.87E+08	1.03E-03
			133.208	746	751452	4	6	2.32E+09	9.25E-03
			133.084	0	751406	2	4	1.94E+09	1.03E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F V	$2s^2 2p-2s2p(^1P^o)3p$	$^2P^o-^2P$	132.840	497	753280	6	6	8.58E+09	2.27E-02
			133.017	746	752529	4	2	2.84E+09	3.77E-03
			132.885	0	752529	2	2	5.70E+09	1.51E-02
			132.818	746	753656	4	4	7.15E+09	1.89E-02
			132.687	0	753656	2	4	1.43E+09	7.55E-03
F V	$2s^2 2p-2s2p(^1P^o)3p$	$^2P^o-^2S$	131.606	497	760342	6	2	8.42E+09	7.29E-03
			131.649	746	760342	4	2	5.61E+09	7.29E-03
			131.520	0	760342	2	2	2.81E+09	7.30E-03
F V	$2s^2 2p-2p^2(^3P)3s$	$^2P^o-^2P$	125.491	497	797366	6	6	1.09E+09	2.57E-03
			125.579	746	797059	4	2	3.62E+08	4.28E-04
			125.506	746	797519	4	4	9.06E+08	2.14E-03
			125.461	0	797059	2	2	7.25E+08	1.71E-03
			125.389	0	797519	2	4	1.82E+08	8.56E-04
F V	$2s^2 2p-2s^2 5d$	$^2P^o-^2D$	123.736	497	808671	6	10	1.37E+10	5.24E-02
			123.775	746	808663	4	4	2.28E+09	5.24E-03
			123.773	746	808677	4	6	1.37E+10	4.72E-02
			123.661	0	808663	2	4	1.14E+10	5.24E-02
F V	$2s^2 2p-2p^2(^1D)3s$	$^2P^o-^2D$	123.369	497	811075	6	10	9.47E+08	3.60E-03
			123.407	746	811075	4	6	9.46E+08	3.24E-03
			123.407	746	811075	4	4	1.58E+08	3.60E-04
			123.293	0	811075	2	4	7.90E+08	3.60E-03
F V	$2s^2 2p-2s2p(^3P^o)4p$	$^2P^o-^2P$	120.610	497	829617	6	6	1.13E+10	2.47E-02
			120.672	746	829436	4	2	3.77E+09	4.11E-03
			120.633	746	829707	4	4	9.44E+09	2.06E-02
			120.564	0	829436	2	2	7.53E+09	1.64E-02
			120.524	0	829707	2	4	1.89E+09	8.24E-03
F V	$2s^2 2p-2s2p(^3P^o)4p$	$^2P^o-^2D$	120.011	497	833752	6	10	1.18E+10	4.23E-02
			120.083	746	833501	4	4	1.95E+09	4.22E-03
			120.023	746	833920	4	6	1.18E+10	3.81E-02
			119.976	0	833501	2	4	9.80E+09	4.23E-02
F V	$2s^2 2p-2s^2 6s$	$^2P^o-^2S$	119.397	497	838036	6	2	8.04E+07	5.73E-05
			119.433	746	838036	4	2	5.36E+07	5.73E-05
			119.327	0	838036	2	2	2.69E+07	5.74E-05
F V	$2s^2 2p-2s^2 6d$	$^2P^o-^2D$	118.624	497	843497	6	10	6.80E+09	2.39E-02
			118.659	746	843497	4	6	6.79E+09	2.15E-02
				0		2	4	5.64E+09	2.38E-02
				746		4	4	1.13E+09	2.38E-03
F V	$2s^2 2p-2p^2(^3P)3d$	$^2P^o-^2P$	117.278	497	853171	6	6	3.25E+08	6.71E-04
			117.331	746	853035	4	4	2.70E+08	5.58E-04
			117.275	746	853442	4	2	1.09E+08	1.12E-04
			117.228	0	853035	2	4	5.41E+07	2.23E-04
			117.173	0	853442	2	2	2.18E+08	4.48E-04
F V	$2s^2 2p-2p^2(^1D)3d$	$^2P^o-^2D$	114.494	497	873904	6	10	1.54E+09	5.03E-03
			114.527	746	873904	4	6	1.54E+09	4.53E-03
			114.527	746	873904	4	4	2.56E+08	5.03E-04
			114.429	0	873904	2	4	1.28E+09	5.03E-03
F V	$2s^2 2p-2p^2(^1D)3d$	$^2P^o-^2P$	113.3100	497	883032	6	6	2.33E+09	4.48E-03
			113.3550	746	882930	4	2	7.76E+08	7.47E-04
			113.3354	746	883083	4	4	1.94E+09	3.73E-03
			113.2593	0	882930	2	2	1.55E+09	2.99E-03
			113.2396	0	883083	2	4	3.90E+08	1.50E-03
F VI	$2s^2-2s2p$	$^1S-^1P^o$	535.206	0	186844	1	3	3.44E+09	4.43E-01
F VI	$2s^2-2s3p$	$^1S-^1P^o$	126.929	0	787844	1	3	6.15E+10	4.46E-01
F VI	$2s^2-2p3s$	$^1S-^1P^o$	112.8301	0	886288	1	3	3.82E+08	2.19E-03
F VI	$2s^2-2p3d$	$^1S-^1P^o$	104.8873	0	953404	1	3	8.08E+09	4.00E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F VI	$2s^2-2s4p$	$1S-1P^o$	99.2201	0	1007860	1	3	2.51E+10	1.11E-01
F VI	$2s^2-2s5p$	$1S-1P^o$	90.9588	0	1099399	1	3	1.23E+10	4.58E-02
F VI	$2s^2-2p4s$	$1S-1P^o$	89.9009	0	1112336	1	3	2.67E+09	9.69E-03
F VI	$2s^2-2p4d$	$1S-1P^o$	87.9088	0	1137543	1	3	3.42E+09	1.19E-02
F VI	$2s^2-2s6p$	$1S-1P^o$	86.6230	0	1154428	1	3	7.20E+09	2.43E-02
F VI	$2s^2-2s7p$	$1S-1P^o$	84.4260	0	1184469	1	3	5.37E+09	1.72E-02
F VI	$2s^2-2s8p$	$1S-1P^o$	83.0790	0	1203674	1	3	3.61E+09	1.12E-02
F VI	$2s^2-2p5d$	$1S-1P^o$	81.6797	0	1224295	1	3	1.87E+09	5.62E-03
F VII	$1s^22s-1s^22p$	$2S-2P^o$	885.66	0	112911	2	6	4.88E+08	1.72E-01
			890.79	0	112260	2	2	4.82E+08	5.73E-02
			883.11	0	113236	2	4	4.92E+08	1.15E-01
F VII	$1s^22s-1s^23p$	$2S-2P^o$	112.9537	0	885319	2	6	4.98E+10	2.86E-01
			112.9780	0	885128	2	2	4.97E+10	9.52E-02
			112.9415	0	885414	2	4	4.97E+10	1.90E-01
F VII	$1s^22s-1s^24p$	$2S-2P^o$	86.7325	0	1152971	2	6	2.31E+10	7.81E-02
			86.7383	0	1152893	2	2	2.31E+10	2.60E-02
			86.7295	0	1153010	2	4	2.31E+10	5.21E-02
F VII	$1s^22s-1s^25p$	$2S-2P^o$	78.3580	0	1276195	2	6	1.21E+10	3.33E-02
			78.3606	0	1276152	2	2	1.21E+10	1.11E-02
			78.3566	0	1276216	2	4	1.21E+10	2.22E-02
F VII	$1s^22s-1s^26p$	$2S-2P^o$	74.4654	0	1342906	2	6	7.06E+09	1.76E-02
			74.4654	0	1342906	2	4	7.04E+09	1.17E-02
			74.4654	0	1342906	2	2	7.07E+09	5.88E-03
F VII	$1s^22s-1s^27p$	$2S-2P^o$	72.3140	0	1382858	2	6	4.46E+09	1.05E-02
			72.3140	0	1382858	2	4	4.47E+09	7.01E-03
			72.3140	0	1382858	2	2	4.46E+09	3.50E-03
F VII	$1s^22s-1s^28p$	$2S-2P^o$	70.9800	0	1408848	2	6	3.01E+09	6.81E-03
			70.9800	0	1408848	2	4	3.01E+09	4.54E-03
			70.9800	0	1408848	2	2	3.01E+09	2.27E-03
F VIII	$1s^2-1s2p$	$1S-1P^o$	16.807	0	5949900	1	3	5.60E+12	7.11E-01
F VIII	$1s^2-1s3p$	$1S-1P^o$	14.458	0	6916600	1	3	1.57E+12	1.48E-01
F VIII	$1s^2-1s4p$	$1S-1P^o$	13.781	0	7256400	1	3	6.52E+11	5.57E-02
F VIII	$1s^2-1s5p$	$1S-1P^o$	13.488	0	7414000	1	3	3.30E+11	2.70E-02
F VIII	$1s^2-1s6p$	$1S-1P^o$	13.334	0	7499600	1	3	1.90E+11	1.52E-02
F VIII	$1s^2-1s7p$	$1S-1P^o$	13.244	0	7550600	1	3	1.20E+11	9.43E-03
F VIII	$1s^2-1s8p$	$1S-1P^o$	13.185	0	7584400	1	3	8.01E+10	6.26E-03
F VIII	$1s^2-1s9p$	$1S-1P^o$	13.143	0	7608600	1	3	5.62E+10	4.37E-03
F IX	$1s-2p$	$2S-2P^o$	14.9841	0	6673724.6	2	6	4.12E+12	4.16E-01
			14.9877	0	[6672119.2]	2	2	4.13E+12	1.39E-01
			14.9823	0	[6674527.3]	2	4	4.12E+12	2.77E-01
F IX	$1s-3p$	$2S-2P^o$	12.6438	0	7909040.8	2	6	1.10E+12	7.90E-02
			12.6445	0	[7908565.1]	2	2	1.10E+12	2.63E-02
			12.6434	0	[7909278.7]	2	4	1.10E+12	5.27E-02
F IX	$1s-4p$	$2S-2P^o$	11.9884	0	8341423.9	2	6	4.49E+11	2.90E-02
			11.9886	0	[8341223.3]	2	2	4.49E+11	9.67E-03
			11.9882	0	[8341524.3]	2	4	4.48E+11	1.93E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
F IX	$1s-5p$	$2S-2P^o$	11.7075	0	8541543.1	2	6	2.25E+11	1.39E-02
			11.7076	0	[8541440.4]	2	2	2.26E+11	4.65E-03
			11.7074	0	[8541594.5]	2	4	2.26E+11	9.30E-03
F IX	$1s-6p$	$2S-2P^o$	11.5604	0	8650242.3	2	6	1.30E+11	7.80E-03
			11.5604	0	[8650182.8]	2	2	1.30E+11	2.60E-03
			11.5603	0	[8650272.0]	2	4	1.30E+11	5.20E-03
F IX	$1s-7p$	$2S-2P^o$	11.4734	0	8715780.5	2	6	8.14E+10	4.82E-03
			11.4735	0	[8715743.0]	2	2	8.11E+10	1.60E-03
			11.4734	0	[8715799.2]	2	4	8.13E+10	3.21E-03
F IX	$1s-8p$	$2S-2P^o$	11.4177	0	8758315.1	2	6	5.44E+10	3.19E-03
			11.4178	0	[8758290.0]	2	2	5.42E+10	1.06E-03
			11.4177	0	[8758327.6]	2	4	5.42E+10	2.12E-03
F IX	$1s-9p$	$2S-2P^o$	11.3798	0	8787475.5	2	6	3.81E+10	2.22E-03
			11.3799	0	[8787457.8]	2	2	3.80E+10	7.38E-04
			11.3798	0	[8787484.3]	2	4	3.81E+10	1.48E-03
F IX	$1s-10p$	$2S-2P^o$	11.3529	0	8808332.9	2	6	2.76E+10	1.60E-03
			11.3529	0	[8808339.4]	2	4	2.77E+10	1.07E-03
			11.3529	0	[8808320.1]	2	2	2.77E+10	5.35E-04
Ne I	$2s^2 2p^6 - 2p^5(^2P^o_{3/2})3s$	$1S-\frac{3}{2}[\frac{3}{2}]^o$	743.7195	0	134459.2873	1	3	4.86E+07	1.21E-02
Ne I	$2s^2 2p^6 - 2p^5(^2P^o_{1/2})3s$	$1S-\frac{1}{2}[\frac{1}{2}]^o$	735.8963	0	135888.7173	1	3	6.12E+08	1.49E-01
Ne I	$2s^2 2p^6 - 2p^5(^2P^o_{3/2})4s$	$1S-\frac{3}{2}[\frac{3}{2}]^o$	629.7388	0	158795.9924	1	3	4.80E+07	8.56E-03
Ne I	$2s^2 2p^6 - 2p^5(^2P^o_{1/2})4s$	$1S-\frac{1}{2}[\frac{1}{2}]^o$	626.8232	0	159534.6196	1	3	7.41E+07	1.31E-02
Ne I	$2s^2 2p^6 - 2p^5(^2P^o_{3/2})3d$	$1S-\frac{3}{2}[\frac{3}{2}]^o$	619.1024	0	161524.1739	1	3	3.30E+07	5.69E-03
Ne I	$2s^2 2p^6 - 2p^5(^2P^o_{3/2})3d$	$1S-\frac{3}{2}[\frac{3}{2}]^o$	618.6717	0	161636.6162	1	3	9.29E+07	1.60E-02
Ne I	$2s^2 2p^6 - 2p^5(^2P^o_{1/2})3s$	$1S-\frac{1}{2}[\frac{3}{2}]^o$	615.6283	0	162435.6675	1	3	3.80E+07	6.48E-03
Ne II	$2s^2 2p^5 - 2s2p^6$	$2P^o-2S$	461.2812	260.11	217047.61	6	2	8.05E+09	8.56E-02
			462.3908	780.34	217047.61	2	2	2.66E+09	8.54E-02
			460.7284	0	217047.61	4	2	5.39E+09	8.57E-02
Ne II	$2s^2 2p^5 - 2p^4(^3P)3s$	$2P^o-2P$	446.3668	260.11	224291.10	6	6	3.88E+09	1.16E-01
			447.8146	780.34	224087.02	2	4	6.47E+08	3.89E-02
			446.5902	780.34	224699.27	2	2	2.60E+09	7.78E-02
			446.2552	0	224087.02	4	4	3.26E+09	9.74E-02
			445.0393	0	224699.27	4	2	1.31E+09	1.95E-02
Ne II	$2s^2 2p^5 - 2p^4(^1D)3s$	$2P^o-2D$	406.2805	260.11	246395.47	6	10	1.58E+09	6.51E-02
			407.1377	780.34	246397.49	2	4	1.31E+09	6.50E-02
			405.8538	0	246394.13	4	6	1.58E+09	5.87E-02
			405.8483	0	246397.49	4	4	2.64E+08	6.52E-03
Ne II	$2s^2 2p^5 - 2p^4(^1S)3s$	$2P^o-2S$	361.7722	260.11	276677.13	6	2	1.50E+09	9.79E-03
			362.4544	780.34	276677.13	2	2	4.97E+08	9.78E-03
			361.4321	0	276677.13	4	2	1.00E+09	9.80E-03
Ne II	$2s^2 2p^5 - 2p^4(^3P)3d$	$2P^o-2D$	357.0272	260.11	280350.81	6	10	3.48E+09	1.11E-01
			357.5346	780.34	280473.58	2	4	2.87E+09	1.10E-01
			356.8001	0	280268.96	4	6	3.47E+09	9.94E-02
			356.5398	0	280473.58	4	4	5.82E+08	1.11E-02
Ne II	$2s^2 2p^5 - 2p^4(^3P)3d$	$2P^o-2P$	355.4533	260.11	281591.04	6	6	2.07E+09	3.92E-02
			356.4399	780.34	281332.55	2	2	1.37E+09	2.61E-02
			355.9480	780.34	281720.28	2	4	3.45E+08	1.31E-02
			355.4512	0	281332.55	4	2	6.91E+08	6.54E-03
			354.9620	0	281720.28	4	4	1.73E+09	3.27E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne II	$2s^2 2p^5 - 2p^4(^3P)4s$	$^2P^o - ^2P$	353.0414	260.11	283513.04	6	6	8.08E+08	1.51E-02
			353.9297	780.34	283322.35	2	4	1.33E+08	5.01E-03
			353.2145	780.34	283894.41	2	2	5.35E+08	1.00E-02
			352.9549	0	283322.35	4	4	6.69E+08	1.25E-02
			352.2436	0	283894.41	4	2	2.71E+08	2.52E-03
Ne II	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2D$	331.0218	260.11	302355.00	6	10	1.54E+09	4.22E-02
			331.5149	780.34	302425.87	2	4	1.28E+09	4.21E-02
			330.7887	0	302307.75	4	6	1.54E+09	3.80E-02
			330.6595	0	302425.87	4	4	2.57E+08	4.22E-03
Ne II	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2P$	330.2047	260.11	303102.54	6	6	6.79E+08	1.11E-02
			331.0694	780.34	302831.80	2	2	4.50E+08	7.40E-03
			330.6249	780.34	303237.91	2	4	1.13E+08	3.71E-03
			330.2163	0	302831.80	4	2	2.26E+08	1.85E-03
			329.7741	0	303237.91	4	4	5.70E+08	9.29E-03
Ne II	$2s^2 2p^5 - 2p^4(^3P)5s$	$^2P^o - ^2P$	329.0886	260.11	304129.61	6	6	2.93E+08	4.76E-03
			329.8219	780.34	303974.29	2	4	4.84E+07	1.58E-03
			329.3158	780.34	304440.24	2	2	1.95E+08	3.17E-03
			328.9752	0	303974.29	4	4	2.45E+08	3.97E-03
			328.4717	0	304440.24	4	2	9.83E+07	7.95E-04
Ne II	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2P$	327.5339	260.11	305572.05	6	6	2.62E+09	4.22E-02
			328.0984	780.34	305566.94	2	4	4.37E+08	1.41E-02
			328.0819	780.34	305582.27	2	2	1.74E+09	2.81E-02
			327.2605	0	305566.94	4	4	2.19E+09	3.51E-02
			327.2441	0	305582.27	4	2	8.77E+08	7.04E-03
Ne II	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2S$	327.0636	260.11	306011.07	6	2	4.45E+09	2.38E-02
			327.6210	780.34	306011.07	2	2	1.48E+09	2.38E-02
			326.7856	0	306011.07	4	2	2.97E+09	2.38E-02
Ne II	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2D$	326.8069	260.11	306251.16	6	10	1.47E+09	3.93E-02
			327.3511	780.34	306262.77	2	4	1.22E+09	3.93E-02
			326.5376	0	306243.42	4	6	1.48E+09	3.55E-02
			326.5170	0	306262.77	4	4	2.46E+08	3.94E-03
Ne II	$2s^2 2p^5 - 2p^4(^1D)4s$	$^2P^o - ^2D$	324.8427	260.11	308101.41	6	10	1.90E+08	5.00E-03
			325.3924	780.34	308101.61	2	4	1.57E+08	4.99E-03
			324.5686	0	308101.27	4	6	1.90E+08	4.50E-03
			324.5682	0	308101.61	4	4	3.17E+07	5.00E-04
Ne II	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^o - ^2D$	319.8439	260.11	312912.64	6	10	1.12E+09	2.87E-02
			320.7251	780.34	312573.79	2	4	9.30E+08	2.87E-02
			319.9245	0	312573.79	4	4	1.87E+08	2.87E-03
			319.3475	0	313138.54	4	6	1.13E+09	2.59E-02
Ne II	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^o - ^2P$	319.4626	260.11	313285.77	6	6	7.19E+08	1.10E-02
			320.2809	780.34	313006.22	2	2	4.75E+08	7.31E-03
			319.8514	780.34	313425.54	2	4	1.19E+08	3.66E-03
			319.4825	0	313006.22	4	2	2.39E+08	1.83E-03
			319.0550	0	313425.54	4	4	6.01E+08	9.17E-03
Ne II	$2s^2 2p^5 - 2p^4(^3P)6s$	$^2P^o - ^2P$	318.9647	260.11	313774.43	6	6	1.97E+08	3.01E-03
			319.6197	780.34	313652.17	2	4	3.26E+07	1.00E-03
			319.2455	780.34	314018.94	2	2	1.31E+08	2.00E-03
			318.8245	0	313652.17	4	4	1.65E+08	2.51E-03
			318.4521	0	314018.94	4	2	6.60E+07	5.02E-04
Ne II	$2s^2 2p^5 - 2p^4(^3P)6d$	$^2P^o - ^2D$	314.7226	260.11	318000.22	6	10	6.30E+08	1.56E-02
			314.4652	0	318000.22	4	6	6.30E+08	1.40E-02
				780.34		2	4	5.25E+08	1.56E-02
				0		4	4	1.05E+08	1.56E-03
Ne II	$2s^2 2p^5 - 2p^4(^3P)7s$	$^2P^o - ^2P$	313.7944	260.11	318940.08	6	6	1.12E+08	1.65E-03
			314.3075	780.34	318940.08	2	4	1.86E+07	5.50E-04
			313.5385	0	318940.08	4	4	9.36E+07	1.38E-03
				780.34		2	2	7.45E+07	1.10E-03
				0		4	2	3.73E+07	2.75E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne II	$2s^2 2p^5 - 2p^4(^1S)4s$	$^2P^\circ - ^2S$	295.3960	260.11	338788.76	6	2	1.77E+09	7.70E-03
			295.8506	780.34	338788.76	2	2	5.86E+08	7.69E-03
			295.1692	0	338788.76	4	2	1.18E+09	7.71E-03
Ne III	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	489.5556	316.8	204583.7	9	9	4.87E+09	1.75E-01
			491.0508	643.3	204288.2	3	5	1.20E+09	7.26E-02
			490.3138	921.5	204872.5	1	3	1.62E+09	1.75E-01
			489.6459	643.3	204872.5	3	3	1.21E+09	4.36E-02
			489.5045	0	204288.2	5	5	3.65E+09	1.31E-01
			488.8742	643.3	205194.9	3	1	4.87E+09	5.82E-02
			488.1085	0	204872.5	5	3	2.04E+09	4.38E-02
Ne III	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	313.3688	316.8	319429.66	9	3	1.11E+10	5.46E-02
			313.9637	921.5	319429.66	1	3	1.23E+09	5.45E-02
			313.6897	643.3	319429.66	3	3	3.69E+09	5.45E-02
			313.0580	0	319429.66	5	3	6.19E+09	5.46E-02
Ne III	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	283.4188	316.8	353151.61	9	15	3.66E+09	7.35E-02
			283.8813	921.5	353181.42	1	3	2.03E+09	7.34E-02
			283.6734	643.3	353161.31	3	5	2.74E+09	5.51E-02
			283.6573	643.3	353181.42	3	3	1.53E+09	1.84E-02
			283.1803	0	353131.90	5	7	3.67E+09	6.18E-02
			283.1567	0	353161.31	5	5	9.15E+08	1.10E-02
			283.1406	0	353181.42	5	3	1.02E+08	7.35E-04
Ne III	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P - ^3P^\circ$	267.2548	316.8	374491.57	9	9	3.81E+09	4.08E-02
			267.6901	921.5	374487.84	1	3	1.26E+09	4.07E-02
			267.4909	643.3	374487.84	3	3	9.51E+08	1.02E-02
			267.4905	643.3	374488.40	3	1	3.80E+09	1.36E-02
			267.4861	643.3	374494.45	3	5	9.51E+08	1.70E-02
			267.0314	0	374487.84	5	3	1.59E+09	1.02E-02
			267.0267	0	374494.45	5	5	2.86E+09	3.06E-02
Ne III	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P - ^3D^\circ$	251.3388	316.8	398186.17	9	15	1.11E+10	1.76E-01
			251.7274	921.5	398176.56	1	3	6.14E+09	1.75E-01
			251.5513	643.3	398176.56	3	3	4.62E+09	4.38E-02
			251.5484	643.3	398181.18	3	5	8.35E+09	1.32E-01
			251.1449	0	398176.56	5	3	3.10E+08	1.76E-03
			251.1420	0	398181.18	5	5	2.78E+09	2.63E-02
			251.1340	0	398193.86	5	7	1.11E+10	1.47E-01
Ne III	$2s^2 2p^4 - 2p^3(^4S^\circ)4s$	$^3P - ^3S^\circ$	238.3740	316.8	419825.74	9	3	3.98E+09	1.13E-02
			238.7180	921.5	419825.74	1	3	4.41E+08	1.13E-02
			238.5596	643.3	419825.74	3	3	1.32E+09	1.13E-02
			238.1941	0	419825.74	5	3	2.21E+09	1.13E-02
Ne III	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3D^\circ$	229.0637	316.8	436876.66	9	15	6.11E+09	8.01E-02
			229.3452	921.5	436945.50	1	3	3.38E+09	8.00E-02
			229.2227	643.3	436900.20	3	5	4.58E+09	6.01E-02
			229.1989	643.3	436945.50	3	3	2.55E+09	2.01E-02
			228.9218	0	436830.34	5	7	6.13E+09	6.74E-02
			228.8852	0	436900.20	5	5	1.53E+09	1.20E-02
			228.8615	0	436945.50	5	3	1.70E+08	8.02E-04
Ne III	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3P^\circ$	227.6273	316.8	439631.38	9	9	1.92E+10	1.49E-01
			227.9090	921.5	439693.13	1	3	6.38E+09	1.49E-01
			227.8277	643.3	439571.40	3	5	4.77E+09	6.19E-02
			227.7646	643.3	439693.13	3	3	4.77E+09	3.71E-02
			227.7371	643.3	439746.06	3	1	1.91E+10	4.95E-02
			227.4943	0	439571.40	5	5	1.44E+10	1.12E-01
			227.4313	0	439693.13	5	3	7.99E+09	3.72E-02
Ne III	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3S^\circ$	227.4107	316.8	440049.92	9	3	1.90E+10	4.92E-02
			227.7238	921.5	440049.92	1	3	2.11E+09	4.92E-02
			227.5796	643.3	440049.92	3	3	6.34E+09	4.92E-02
			227.2469	0	440049.92	5	3	1.06E+10	4.93E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne III	$2s^2 2p^4 - 2p^3(^4S^\circ)4d$	$^3P - ^3D^\circ$	223.2534	316.8	448238.34	9	15	6.58E+09	8.20E-02
			223.5638	921.5	448221.08	1	3	3.64E+09	8.19E-02
			223.4249	643.3	448221.08	3	3	2.74E+09	2.05E-02
			223.4193	643.3	448232.22	3	5	4.92E+09	6.14E-02
			223.1042	0	448221.08	5	3	1.83E+08	8.20E-04
			223.0986	0	448232.22	5	5	1.65E+09	1.23E-02
			223.0897	0	448250.11	5	7	6.60E+09	6.89E-02
Ne III	$2s^2 2p^4 - 2p^3(^4S^\circ)5s$	$^3P - ^3S^\circ$	218.5965	316.8	457780.76	9	3	1.97E+09	4.71E-03
			218.8858	921.5	457780.76	1	3	2.18E+08	4.70E-03
			218.7526	643.3	457780.76	3	3	6.57E+08	4.71E-03
			218.4452	0	457780.76	5	3	1.10E+09	4.71E-03
Ne III	$2s^2 2p^4 - 2p^3(^2D^\circ)4s$	$^3P - ^3D^\circ$	218.4996	316.8	457983.55	9	15	7.35E+09	8.77E-02
			218.7809	921.5	457999.84	1	3	4.07E+09	8.76E-02
			218.6643	643.3	457965.29	3	5	5.50E+09	6.57E-02
			218.6478	643.3	457999.84	3	3	3.06E+09	2.19E-02
			218.3572	0	457965.29	5	5	1.85E+09	1.32E-02
			218.3456	0	457989.62	5	7	7.37E+09	7.37E-02
			218.3407	0	457999.84	5	3	2.05E+08	8.77E-04
Ne III	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3P^\circ$	218.3068	316.8	458387.81	9	9	5.60E+09	4.00E-02
			218.6211	921.5	458333.86	1	3	1.86E+09	4.00E-02
			218.5120	643.3	458284.17	3	1	5.62E+09	1.34E-02
			218.4882	643.3	458333.86	3	3	1.39E+09	9.97E-03
			218.4371	643.3	458440.91	3	5	1.40E+09	1.67E-02
			218.1816	0	458333.86	5	3	2.33E+09	9.99E-03
			218.1306	0	458440.91	5	5	4.22E+09	3.01E-02
Ne III	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3D^\circ$	217.4804	316.8	460128.37	9	15	2.50E+09	2.96E-02
			217.7740	921.5	460113.16	1	3	1.39E+09	2.96E-02
			217.6421	643.3	460113.16	3	3	1.04E+09	7.40E-03
			217.6365	643.3	460125.15	3	5	1.87E+09	2.21E-02
			217.3378	0	460113.16	5	3	6.99E+07	2.97E-04
			217.3322	0	460125.15	5	5	6.27E+08	4.44E-03
			217.3265	0	460137.19	5	7	2.51E+09	2.49E-02
Ne III	$2s^2 2p^4 - 2p^3(^4S^\circ)5d$	$^3P - ^3D^\circ$	212.3762	316.8	471179.4	9	15	4.03E+09	4.54E-02
			212.5236	643.3	471179.2	3	5	3.02E+09	3.41E-02
			212.2335	0	471179.2	5	5	1.01E+09	6.83E-03
			212.2333	0	471179.52	5	7	4.04E+09	3.82E-02
				921.5		1	3	2.24E+09	4.54E-02
				643.3		3	3	1.69E+09	1.14E-02
				0		5	3	1.12E+08	4.54E-04
Ne III	$2s^2 2p^4 - 2p^3(^2P^\circ)4s$	$^3P - ^3P^\circ$	208.5454	316.8	479828.65	9	9	1.81E+09	1.18E-02
			208.8099	921.5	479825.95	1	3	6.02E+08	1.18E-02
			208.6887	643.3	479825.95	3	3	4.49E+08	2.93E-03
			208.6870	643.3	479829.90	3	5	4.50E+08	4.90E-03
			208.6867	643.3	479830.47	3	1	1.80E+09	3.92E-03
			208.4089	0	479825.95	5	3	7.52E+08	2.94E-03
			208.4072	0	479829.90	5	5	1.35E+09	8.82E-03
Ne III	$2s^2 2p^4 - 2p^3(^2D^\circ)5s$	$^3P - ^3D^\circ$	200.9268	316.8	498010.62	9	15	6.28E+08	6.34E-03
			201.1600	921.5	498038.11	1	3	3.48E+08	6.33E-03
			201.0552	643.3	498019.11	3	5	4.71E+08	4.76E-03
			201.0475	643.3	498038.11	3	3	2.62E+08	1.59E-03
			200.8061	0	497992.77	5	7	6.30E+08	5.33E-03
			200.7955	0	498019.11	5	5	1.57E+08	9.52E-04
			200.7878	0	498038.11	5	3	1.75E+07	6.34E-05
Ne IV	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$	542.823	0	184222	4	12	1.76E+09	2.33E-01
			543.892	0	183860	4	6	1.74E+09	1.16E-01
			542.073	0	184477	4	4	1.77E+09	7.79E-02
			541.128	0	184799	4	2	1.78E+09	3.90E-02
Ne IV	$2s^2 2p^3 - 2p^3(^3P)3s$	$^4S^\circ - ^4P$	208.634	0	479309	4	12	6.74E+09	1.32E-01
			208.899	0	478701	4	2	6.76E+09	2.21E-02
			208.732	0	479083	4	4	6.77E+09	4.42E-02
			208.480	0	479662	4	6	6.78E+09	6.63E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne IV	$2s^2 2p^3 - 2p^2(^3P)3d$	$4S^\circ - 4P$	172.567	0	579485	4	12	6.92E+10	9.27E-01
			172.620	0	579307	4	6	6.91E+10	4.63E-01
			172.525	0	579626	4	4	6.92E+10	3.09E-01
			172.492	0	579737	4	2	6.90E+10	1.54E-01
Ne IV	$2s^2 2p^3 - 2p^2(^3P)4s$	$4S^\circ - 4P$	157.717	0	634047	4	12	4.07E+09	4.55E-02
			157.862	0	633465	4	2	4.06E+09	7.59E-03
			157.781	0	633790	4	4	4.05E+09	1.51E-02
			157.626	0	634413	4	6	4.08E+09	2.28E-02
Ne IV	$2s^2 2p^3 - 2p^2(^3P)4d$	$4S^\circ - 4P$	148.843	0	671848	4	12	2.90E+10	2.89E-01
			148.942	0	671402	4	6	2.91E+10	1.45E-01
			148.787	0	672102	4	4	2.91E+10	9.65E-02
			148.660	0	672676	4	2	2.91E+10	4.82E-02
Ne IV	$2s^2 2p^3 - 2p^2(^3P)5s$	$4S^\circ - 4P$	144.106	0	693933	4	12	9.24E+08	8.63E-03
			144.278	0	693106	4	2	9.23E+08	1.44E-03
			144.151	0	693717	4	4	9.24E+08	2.88E-03
			144.019	0	694353	4	6	9.26E+08	4.32E-03
Ne V	$2s^2 2p^2 - 2s2p^3$	$3P - 3D^\circ$	571.035	756	175876	9	15	1.13E+09	9.23E-02
			572.338	1112	175834	5	7	1.13E+09	7.74E-02
			572.105	1112	175905	5	5	2.81E+08	1.38E-02
			572.033	1112	175927	5	3	3.13E+07	9.22E-04
			569.830	414	175905	3	5	8.55E+08	6.94E-02
			569.758	414	175927	3	3	4.75E+08	2.31E-02
			568.418	0	175927	1	3	6.39E+08	9.28E-02
Ne V	$2s^2 2p^2 - 2s2p^3$	$3P - 3P^\circ$	482.148	756	208161	9	9	3.16E+09	1.10E-01
			482.987	1112	208157	5	5	2.34E+09	8.19E-02
			482.987	1112	208157	5	3	1.30E+09	2.73E-02
			481.364	414	208157	3	3	7.89E+08	2.74E-02
			481.364	414	208157	3	5	7.89E+08	4.57E-02
			481.281	414	208193	3	1	3.16E+09	3.66E-02
			480.407	0	208157	1	3	1.06E+09	1.10E-01
Ne V	$2s^2 2p^2 - 2s2p^3$	$3P - 3S^\circ$	358.926	756	279365	9	3	2.16E+10	1.39E-01
			359.385	1112	279365	5	3	1.19E+10	1.38E-01
			358.486	414	279365	3	3	7.21E+09	1.39E-01
			357.955	0	279365	1	3	2.41E+09	1.39E-01
Ne V	$2s^2 2p^2 - 2s^2 2p3s$	$3P - 3P^\circ$	167.693	756	597083	9	9	1.81E+10	7.63E-02
			167.922	1112	596626	5	3	7.53E+09	1.91E-02
			167.830	414	596254	3	1	1.80E+10	2.54E-02
			167.726	414	596626	3	3	4.53E+09	1.91E-02
			167.670	1112	597523	5	5	1.36E+10	5.73E-02
			167.609	0	596626	1	3	6.04E+09	7.63E-02
			167.474	414	597523	3	5	4.54E+09	3.18E-02
Ne V	$2s^2 2p^2 - 2s^2 2p3d$	$3P - 3D^\circ$	143.316	756	698517	9	15	1.31E+11	6.73E-01
			143.448	1112	698231	5	3	3.63E+09	6.72E-03
			143.416	1112	698382	5	5	3.28E+10	1.01E-01
			143.344	1112	698735	5	7	1.31E+11	5.66E-01
			143.304	414	698231	3	3	5.46E+10	1.68E-01
			143.273	414	698382	3	5	9.85E+10	5.05E-01
			143.219	0	698231	1	3	7.29E+10	6.73E-01
Ne V	$2s^2 2p^2 - 2s^2 2p3d$	$3P - 3P^\circ$	142.615	756	701945	9	9	7.44E+10	2.27E-01
			142.724	1112	701765	5	5	5.57E+10	1.70E-01
			142.661	1112	702074	5	3	3.10E+10	5.67E-02
			142.582	414	701765	3	5	1.86E+10	9.45E-02
			142.519	414	702074	3	3	1.86E+10	5.67E-02
			142.441	414	702459	3	1	7.46E+10	7.56E-02
			142.435	0	702074	1	3	2.49E+10	2.27E-01
Ne V	$2s^2 2p^2 - 2s2p^2(^4P)3p$	$3P - 3S^\circ$	135.795	756	737160	9	3	2.91E+10	2.68E-02
			135.861	1112	737160	5	3	1.61E+10	2.68E-02
			135.732	414	737160	3	3	9.70E+09	2.68E-02
			135.656	0	737160	1	3	3.24E+09	2.68E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne V	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3D^o$	132.007	756	758289	9	15	2.41E+10	1.05E-01
			132.111	1112	758050	5	5	6.04E+09	1.58E-02
			132.040	1112	758460	5	7	2.43E+10	8.88E-02
			131.990	414	758050	3	5	1.82E+10	7.93E-02
				0		1	3	1.34E+10	1.05E-01
				414		3	3	1.01E+10	2.63E-02
				1112		5	3	6.70E+08	1.05E-03
Ne V	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3P^o$	130.700	756	765865	9	9	2.03E+10	5.19E-02
			130.800	1112	765640	5	3	8.38E+09	1.29E-02
			130.738	1112	766000	5	5	1.52E+10	3.89E-02
			130.680	414	765640	3	3	5.04E+09	1.29E-02
			130.619	414	766000	3	5	5.07E+09	2.16E-02
			130.610	0	765640	1	3	6.76E+09	5.19E-02
				414		3	1	2.01E+10	1.72E-02
Ne V	$2s^2 2p^2 - 2s^2 2p 4s$	$^3P - ^3P^o$	125.862	756	795279	9	9	7.71E+09	1.83E-02
			125.918	1112	795279	5	5	5.76E+09	1.37E-02
			125.918	1112	795279	5	3	3.20E+09	4.57E-03
			125.808	414	795279	3	3	1.93E+09	4.58E-03
			125.808	414	795279	3	5	1.93E+09	7.63E-03
			125.808	414	795279	3	1	7.72E+09	6.11E-03
			125.742	0	795279	1	3	2.57E+09	1.83E-02
Ne V	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3D^o$	118.911	756	841721	9	15	5.04E+10	1.78E-01
			119.010	1112	841380	5	7	5.01E+10	1.49E-01
			118.919	1112	842020	5	5	1.26E+10	2.67E-02
			118.919	1112	842020	5	3	1.40E+09	1.78E-03
			118.820	414	842020	3	5	3.77E+10	1.33E-01
			118.820	414	842020	3	3	2.10E+10	4.45E-02
			118.762	0	842020	1	3	2.81E+10	1.78E-01
Ne V	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3P^o$	118.743	756	842914	9	9	2.26E+10	4.78E-02
			118.793	1112	842914	5	5	1.69E+10	3.58E-02
			118.793	1112	842914	5	3	9.37E+09	1.19E-02
			118.694	414	842914	3	3	5.63E+09	1.19E-02
			118.694	414	842914	3	5	5.65E+09	1.99E-02
			118.694	414	842914	3	1	2.26E+10	1.59E-02
			118.636	0	842914	1	3	7.55E+09	4.78E-02
Ne V	$2s^2 2p^2 - 2s^2 2p 5d$	$^3P - ^3D^o$	110.377	756	906740	9	15	2.33E+10	7.10E-02
			110.421	1112	906740	5	7	2.33E+10	5.96E-02
				414		3	5	1.75E+10	5.32E-02
				0		1	3	1.29E+10	7.09E-02
				1112		5	5	5.80E+09	1.06E-02
				414		3	3	9.69E+09	1.77E-02
				1112		5	3	6.47E+08	7.09E-04
Ne V	$2s^2 2p^2 - 2s^2 2p 5d$	$^3P - ^3P^o$	110.316	756	907240	9	9	1.33E+10	2.42E-02
			110.360	1112	907240	5	5	9.97E+09	1.82E-02
			110.360	1112	907240	5	3	5.54E+09	6.07E-03
			110.275	414	907240	3	3	3.33E+09	6.07E-03
			110.275	414	907240	3	5	3.32E+09	1.01E-02
			110.275	414	907240	3	1	1.33E+10	8.09E-03
			110.224	0	907240	1	3	4.45E+09	2.43E-02
Ne V	$2s^2 2p^2 - 2s 2p^2 (^4P) 4p$	$^3P - ^3D^o$	108.048	756	926270	9	15	1.12E+10	3.27E-02
			108.090	1112	926270	5	5	2.79E+09	4.89E-03
			108.008	414	926270	3	5	8.40E+09	2.45E-02
				1112		5	7	1.11E+10	2.73E-02
				0		1	3	6.21E+09	3.26E-02
				414		3	3	4.65E+09	8.14E-03
				1112		5	3	3.10E+08	3.26E-04
Ne VI	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2D$	561.387	873	179004	6	10	1.15E+09	9.02E-02
			562.803	1310	178992	4	6	1.14E+09	8.10E-02
			562.711	1310	179021	4	4	1.90E+08	9.00E-03
			558.594	0	179021	2	4	9.69E+08	9.07E-02
Ne VI	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2S$	434.821	873	230853	6	2	5.32E+09	5.03E-02
			435.648	1310	230853	4	2	3.54E+09	5.03E-02
			433.176	0	230853	2	2	1.80E+09	5.05E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne VI	$2s^2 2p-2s^2 2p^2$	$^2P^\circ-^2P$	401.662	873	249839	6	6	1.04E+10	2.52E-01
			403.255	1310	249292	4	2	3.43E+09	4.18E-02
			401.926	1310	250112	4	4	8.67E+09	2.10E-01
			401.136	0	249292	2	2	6.96E+09	1.68E-01
			399.821	0	250112	2	4	1.76E+09	8.44E-02
Ne VI	$2s^2 2p-2s^2 3s$	$^2P^\circ-^2S$	138.555	873	722610	6	2	2.95E+10	2.83E-02
			138.639	1310	722610	4	2	1.96E+10	2.83E-02
			138.387	0	722610	2	2	9.89E+09	2.84E-02
Ne VI	$2s^2 2p-2s^2 3d$	$^2P^\circ-^2D$	122.619	873	816405	6	10	1.52E+11	5.71E-01
			122.685	1310	816405	4	6	1.52E+11	5.14E-01
			122.685	1310	816405	4	4	2.53E+10	5.71E-02
			122.488	0	816405	2	4	1.27E+11	5.72E-01
Ne VI	$2s^2 2p-2s^2 2p(^3P^\circ)3p$	$^2P^\circ-^2P$	114.20	873	876500	6	6	5.32E+10	1.04E-01
			114.30	1310	876190	4	2	1.76E+10	1.72E-02
			114.24	1310	876660	4	4	4.42E+10	8.65E-02
			114.13	0	876190	2	2	3.54E+10	6.92E-02
			114.07	0	876660	2	4	8.87E+09	3.46E-02
Ne VI	$2s^2 2p-2s^2 2p(^3P^\circ)3p$	$^2P^\circ-^2D$	111.147	873	900580	6	10	5.44E+10	1.68E-01
			111.261	1310	900100	4	4	9.05E+09	1.68E-02
			111.162	1310	900900	4	6	5.47E+10	1.52E-01
			111.099	0	900100	2	4	4.54E+10	1.68E-01
Ne VI	$2s^2 2p-2s^2 2p(^3P^\circ)3p$	$^2P^\circ-^2S$	109.411	873	914860	6	2	4.88E+10	2.92E-02
			109.463	1310	914860	4	2	3.25E+10	2.92E-02
			109.306	0	914860	2	2	1.64E+10	2.93E-02
Ne VI	$2s^2 2p-2s^2 2p(^1P^\circ)3p$	$^2P^\circ-^2D$	101.501	873	986080	6	10	7.65E+09	1.97E-02
			101.555	1310	986000	4	4	1.27E+09	1.97E-03
			101.540	1310	986140	4	6	7.63E+09	1.77E-02
			101.420	0	986000	2	4	6.39E+09	1.97E-02
Ne VI	$2s^2 2p-2s^2 2p(^1P^\circ)3p$	$^2P^\circ-^2P$	101.309	873	987950	6	6	1.81E+10	2.78E-02
			101.354	1310	987950	4	4	1.51E+10	2.32E-02
			101.220	0	987950	2	4	3.02E+09	9.29E-03
				0		2	2	1.21E+10	1.86E-02
				1310		4	2	6.03E+09	4.64E-03
Ne VI	$2s^2 2p-2s^2 4d$	$^2P^\circ-^2D$	98.215	873	1019050	6	10	5.06E+10	1.22E-01
			98.257	1310	1019050	4	6	5.07E+10	1.10E-01
			98.257	1310	1019050	4	4	8.43E+09	1.22E-02
			98.131	0	1019050	2	4	4.23E+10	1.22E-01
Ne VI	$2s^2 2p-2p^2(^1D)3s$	$^2P^\circ-^2D$	94.755	873	1056230	6	10	4.59E+07	1.03E-04
			94.794	1310	1056230	4	6	4.58E+07	9.25E-05
			94.794	1310	1056230	4	4	7.65E+06	1.03E-05
			94.676	0	1056230	2	4	3.83E+07	1.03E-04
Ne VI	$2s^2 2p-2s^2 5d$	$^2P^\circ-^2D$	90.021	873	1111730	6	10	2.76E+10	5.59E-02
			90.056	1310	1111730	4	6	2.76E+10	5.04E-02
			90.056	1310	1111730	4	4	4.60E+09	5.59E-03
			89.950	0	1111730	2	4	2.30E+10	5.59E-02
Ne VI	$2s^2 2p-2s^2 2p(^3P^\circ)4p$	$^2P^\circ-^2D$	89.066	873	1123640	6	10	2.32E+10	4.60E-02
			89.100	1310	1123640	4	6	2.32E+10	4.14E-02
				0		2	4	1.92E+10	4.57E-02
				1310		4	4	3.84E+09	4.57E-03
Ne VI	$2s^2 2p-2s^2 6d$	$^2P^\circ-^2D$	86.1544	873	1161580	6	10	1.40E+10	2.60E-02
			86.1868	1310	1161580	4	6	1.40E+10	2.34E-02
			86.1868	1310	1161580	4	4	2.33E+09	2.60E-03
			86.0896	0	1161580	2	4	1.17E+10	2.61E-02
Ne VII	$2s^2-2s2p$	$^1S-^1P^\circ$	465.220	0	214952	1	3	4.00E+09	3.89E-01
Ne VII	$2s^2-2s3p$	$^1S-^1P^\circ$	97.495	0	1025690	1	3	1.14E+11	4.86E-01
Ne VII	$2s^2-2p3s$	$^1S-^1P^\circ$	87.2235	0	1146480	1	3	1.73E+09	5.92E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne VII	$2s^2-2p3d$	$^1S-^1P^o$	82.0082	0	1219390	1	3	1.20E+10	3.64E-02
Ne VII	$2s^2-2s4p$	$^1S-^1P^o$	75.7650	0	1319870	1	3	4.88E+10	1.26E-01
Ne VII	$2s^2-2p4s$	$^1S-^1P^o$	69.2972	0	1443060	1	3	5.42E+09	1.17E-02
Ne VII	$2s^2-2p4d$	$^1S-^1P^o$	67.7870	0	1475210	1	3	2.45E+09	5.06E-03
Ne VII	$2s^2-2s6p$	$^1S-^1P^o$	65.850	0	1518600	1	3	1.50E+10	2.93E-02
Ne VIII	$1s^22s-1s^22p$	$^2S-^2P^o$	773.6858	0	129251.4	2	6	5.68E+08	1.53E-01
			780.3240	0	128151.9	2	2	5.53E+08	5.05E-02
			770.4089	0	129801.2	2	4	5.79E+08	1.03E-01
Ne VIII	$1s^22s-1s^23p$	$^2S-^2P^o$	88.092	0	1135180	2	6	8.65E+10	3.02E-01
			88.117	0	1134860	2	2	8.59E+10	1.00E-01
			88.079	0	1135340	2	4	8.64E+10	2.01E-01
Ne VIII	$1s^22s-1s^24p$	$^2S-^2P^o$	67.3818	0	1484080	2	6	3.98E+10	8.12E-02
			67.3818	0	1484080	2	4	3.97E+10	5.41E-02
			67.3818	0	1484080	2	2	3.98E+10	2.71E-02
Ne VIII	$1s^22s-1s^25p$	$^2S-^2P^o$	60.7958	0	1644850	2	6	2.08E+10	3.45E-02
			60.7958	0	1644850	2	4	2.08E+10	2.30E-02
			60.7958	0	1644850	2	2	2.08E+10	1.15E-02
Ne VIII	$1s^22s-1s^26p$	$^2S-^2P^o$	57.7471	0	1731690	2	6	1.21E+10	1.81E-02
			57.7471	0	1731690	2	4	1.21E+10	1.21E-02
			57.7471	0	1731690	2	2	1.21E+10	6.04E-03
Ne VIII	$1s^22s-1s^27p$	$^2S-^2P^o$	56.0431	0	1784340	2	6	7.65E+09	1.08E-02
			56.0431	0	1784340	2	4	7.66E+09	7.21E-03
			56.0431	0	1784340	2	2	7.67E+09	3.61E-03
Ne VIII	$1s^22s-1s^28p$	$^2S-^2P^o$	55.0100	0	1817850	2	6	5.15E+09	7.01E-03
			55.0100	0	1817850	2	4	5.16E+09	4.68E-03
			55.0100	0	1817850	2	2	5.14E+09	2.33E-03
Ne VIII	$1s^22s-1s^29p$	$^2S-^2P^o$	54.309	0	1841300	2	6	3.61E+09	4.79E-03
			54.309	0	1841300	2	4	3.62E+09	3.20E-03
			54.309	0	1841300	2	2	3.60E+09	1.59E-03
Ne VIII	$1s^22s-1s^210p$	$^2S-^2P^o$	53.810	0	1858400	2	6	2.64E+09	3.44E-03
			53.810	0	1858400	2	4	2.63E+09	2.28E-03
			53.810	0	1858400	2	2	2.63E+09	1.14E-03
Ne IX	$1s^2-1s2p$	$^1S-^1P^o$	13.4471	0	7436560	1	3	8.90E+12	7.24E-01
Ne IX	$1s^2-1s3p$	$^1S-^1P^o$	11.5466	0	8660530	1	3	2.48E+12	1.49E-01
Ne IX	$1s^2-1s4p$	$^1S-^1P^o$	11.0003	0	9090630	1	3	1.03E+12	5.61E-02
Ne IX	$1s^2-1s5p$	$^1S-^1P^o$	10.7643	0	9290000	1	3	5.20E+11	2.71E-02
Ne IX	$1s^2-1s6p$	$^1S-^1P^o$	10.6426	0	9396200	1	3	3.00E+11	1.53E-02
Ne IX	$1s^2-1s7p$	$^1S-^1P^o$	10.5650	0	9465200	1	3	1.89E+11	9.47E-03
Ne IX	$1s^2-1s8p$	$^1S-^1P^o$	10.513	0	9512000	1	3	1.26E+11	6.28E-03
Ne X	$1s-2p$	$^2S-^2P^o$	12.1339	0	8241382	2	6	6.28E+12	4.16E-01
			12.1375	0	[8238933]	2	2	6.29E+12	1.39E-01
			12.1321	0	[8242606]	2	4	6.28E+12	2.77E-01
Ne X	$1s-3p$	$^2S-^2P^o$	10.2389	0	9766700	2	6	1.68E+12	7.90E-02
			10.2396	0	[9765975]	2	2	1.67E+12	2.63E-02
			10.2385	0	[9767063]	2	4	1.68E+12	5.27E-02
Ne X	$1s-4p$	$^2S-^2P^o$	9.7082	0	10300596	2	6	6.84E+11	2.90E-02
			9.7085	0	[10300290]	2	2	6.84E+11	9.67E-03
			9.7080	0	[10300749]	2	4	6.83E+11	1.93E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ne X	$1s-5p$	$^2S-^2P^o$	9.4807	0	10547694	2	6	3.44E+11	1.39E-02
			9.4809	0	[10547537]	2	2	3.45E+11	4.65E-03
			9.4807	0	[10547772]	2	4	3.45E+11	9.30E-03
Ne X	$1s-6p$	$^2S-^2P^o$	9.3616	0	10681909	2	6	1.98E+11	7.80E-03
			9.3617	0	[10681818]	2	2	1.98E+11	2.60E-03
			9.3616	0	[10681954]	2	4	1.98E+11	5.20E-03
Ne X	$1s-7p$	$^2S-^2P^o$	9.2912	0	10762830	2	6	1.24E+11	4.82E-03
			9.2913	0	[10762773]	2	2	1.24E+11	1.60E-03
			9.2912	0	[10762859]	2	4	1.24E+11	3.21E-03
Ne X	$1s-8p$	$^2S-^2P^o$	9.2461	0	10815348	2	6	8.30E+10	3.19E-03
			9.2462	0	[10815309]	2	2	8.27E+10	1.06E-03
			9.2461	0	[10815367]	2	4	8.27E+10	2.12E-03
Ne X	$1s-9p$	$^2S-^2P^o$	9.2154	0	10851352	2	6	5.81E+10	2.22E-03
			9.2155	0	[10851325]	2	2	5.80E+10	7.38E-04
			9.2154	0	[10851365]	2	4	5.81E+10	1.48E-03
Ne X	$1s-10p$	$^2S-^2P^o$	9.1936	0	10877104	2	6	4.21E+10	1.60E-03
			9.1936	0	[10877114]	2	4	4.22E+10	1.07E-03
			9.1936	0	[10877085]	2	2	4.22E+10	5.35E-04
Na I	$2p^63s-2p^63p$	$^2S-^2P^o$	5893.5729	0	16967.636	2	6	6.40E+07	1.00E+00
			5897.5575	0	16956.172	2	2	6.42E+07	3.35E-01
			5891.5826	0	16973.368	2	4	6.44E+07	6.70E-01
Na I	$2p^63s-2p^64p$	$^2S-^2P^o$	3303.523	0	30270.72	2	6	2.75E+06	1.35E-02
			3303.929	0	30266.99	2	2	2.75E+06	4.50E-03
			3303.319	0	30272.58	2	4	2.75E+06	9.01E-03
Na I	$2p^63s-2p^65p$	$^2S-^2P^o$	2853.716	0	35042.03	2	6	5.43E+05	1.99E-03
			2853.850	0	35040.38	2	2	5.44E+05	6.64E-04
			2853.649	0	35042.85	2	4	5.45E+05	1.33E-03
Na I	$2p^63s-2p^66p$	$^2S-^2P^o$	2681.168	0	37297.18	2	6	1.86E+05	6.03E-04
			2681.230	0	37296.32	2	2	1.86E+05	2.01E-04
			2681.137	0	37297.61	2	4	1.86E+05	4.01E-04
Na I	$2p^63s-2p^67p$	$^2S-^2P^o$	2594.661	0	38540.68	2	6	8.42E+04	2.55E-04
			2594.695	0	38540.18	2	2	8.44E+04	8.52E-05
			2594.644	0	38540.93	2	4	8.42E+04	1.70E-04
Na I	$2p^63s-2p^68p$	$^2S-^2P^o$	2544.615	0	39298.68	2	6	4.57E+04	1.33E-04
			2544.636	0	39298.35	2	2	4.55E+04	4.42E-05
			2544.604	0	39298.84	2	4	4.56E+04	8.85E-05
Na I	$2p^63s-2p^69p$	$^2S-^2P^o$	2512.8974	0	39794.700	2	6	2.75E+04	7.81E-05
			2512.9113	0	[39794.480]	2	2	2.75E+04	2.60E-05
			2512.8905	0	[39794.810]	2	4	2.75E+04	5.20E-05
Na I	$2p^63s-2p^610p$	$^2S-^2P^o$	2491.4691	0	40136.961	2	6	1.79E+04	5.00E-05
			2491.4788	0	[40136.805]	2	2	1.78E+04	1.66E-05
			2491.4643	0	[40137.039]	2	4	1.79E+04	3.33E-05
Na II	$2s^22p^6-2p^53s$	$^1S-^1P^o$	372.0751	0	268762.96	1	3	3.50E+09	2.18E-01
Na III	$2s^22p^5-2s2p^6$	$^2P^o-^2S$	378.7885	455.4	264455.0	6	2	1.24E+10	8.87E-02
			380.0999	1366.3	264455.0	2	2	4.08E+09	8.84E-02
			378.1362	0	264455.0	4	2	8.29E+09	8.89E-02
Na III	$2s^22p^5-2p^4(^3P)3s$	$^2P^o-^2P$	267.7189	455.4	373981.52	6	6	1.14E+10	1.22E-01
			268.6251	1366.3	373632.32	2	4	1.86E+09	4.03E-02
			267.8713	1366.3	374679.91	2	2	7.50E+09	8.07E-02
			267.6428	0	373632.32	4	4	9.40E+09	1.01E-01
			266.8945	0	374679.91	4	2	3.80E+09	2.03E-02
Na III	$2s^22p^5-2p^4(^1D)3s$	$^2P^o-^2D$	250.8011	455.4	399177.75	6	10	4.45E+09	7.00E-02
			251.3725	1366.3	399182.31	2	4	3.69E+09	6.99E-02
			250.5169	0	399174.71	4	6	4.47E+09	6.31E-02
			250.5121	0	399182.31	4	4	7.45E+08	7.01E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm $^{-1}$	$E_k$ , cm $^{-1}$	$g_i$	$g_k$	$A_{ki}$ , s $^{-1}$	$f_{ik}$
Na III	$2s^2 2p^5 - 2p^4(^1S)3s$	$^2P^o - ^2S$	230.1112	455.4	435028.00	6	2	4.72E+09	1.25E-02
			230.5945	1366.3	435028.00	2	2	1.56E+09	1.24E-02
			229.8703	0	435028.00	4	2	3.16E+09	1.25E-02
Na III	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2D$	215.4310	455.4	464641.23	6	10	1.98E+10	2.30E-01
			215.6792	1366.3	465017.83	2	4	1.64E+10	2.29E-01
			215.3362	0	464390.17	4	6	1.99E+10	2.07E-01
			215.0455	0	465017.83	4	4	3.32E+09	2.30E-02
Na III	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2P$	214.5583	455.4	466529.32	6	6	9.61E+09	6.63E-02
			215.2178	1366.3	466011.91	2	2	6.35E+09	4.41E-02
			214.8589	1366.3	466788.03	2	4	1.60E+09	2.21E-02
			214.5868	0	466011.91	4	2	3.22E+09	1.11E-02
			214.2300	0	466788.03	4	4	8.05E+09	5.54E-02
Na III	$2s^2 2p^5 - 2p^4(^3P)4s$	$^2P^o - ^2P$	207.3503	455.4	482730.98	6	6	3.23E+09	2.08E-02
			207.8847	1366.3	482402.20	2	4	5.35E+08	6.93E-03
			207.4593	1366.3	483388.55	2	2	2.15E+09	1.39E-02
			207.2959	0	482402.20	4	4	2.70E+09	1.74E-02
			206.8729	0	483388.55	4	2	1.08E+09	3.48E-03
Na III	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2P$	202.9342	455.4	493226.03	6	6	1.43E+10	8.82E-02
			203.3240	1366.3	493192.06	2	4	2.36E+09	2.93E-02
			203.2819	1366.3	493293.98	2	2	9.47E+09	5.87E-02
			202.7608	0	493192.06	4	4	1.19E+10	7.36E-02
			202.7189	0	493293.98	4	2	4.77E+09	1.47E-02
Na III	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2S$	202.6779	455.4	493849.24	6	2	2.53E+10	5.20E-02
			203.0527	1366.3	493849.24	2	2	8.40E+09	5.19E-02
			202.4909	0	493849.24	4	2	1.70E+10	5.21E-02
Na III	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2D$	202.3552	455.4	494635.98	6	10	6.62E+09	6.77E-02
			202.7084	1366.3	494685.86	2	4	5.49E+09	6.76E-02
			202.1825	0	494602.73	4	6	6.62E+09	6.09E-02
			202.1485	0	494685.86	4	4	1.11E+09	6.78E-03
Na III	$2s^2 2p^5 - 2p^4(^1D)4s$	$^2P^o - ^2D$	195.7029	455.4	511434.1	6	10	1.07E+09	1.02E-02
			196.0525	1366.3	511433.8	2	4	8.85E+08	1.02E-02
			195.5287	0	511433.8	4	4	1.78E+08	1.02E-03
			195.5285	0	511434.3	4	6	1.07E+09	9.16E-03
Na III	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2D$	194.261	455.4	515226	6	10	1.12E+10	1.06E-01
			194.685	1366.3	515017	2	4	9.33E+09	1.06E-01
			194.168	0	515017	4	4	1.88E+09	1.06E-02
			194.037	0	515365	4	6	1.13E+10	9.59E-02
Na III	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2P$	194.082	455.4	515703	6	6	6.98E+09	3.94E-02
			194.638	1366.3	515140	2	2	4.61E+09	2.62E-02
			194.319	1366.3	515984	2	4	1.16E+09	1.31E-02
			194.122	0	515140	4	2	2.32E+09	6.56E-03
			193.804	0	515984	4	4	5.84E+09	3.29E-02
Na III	$2s^2 2p^5 - 2p^4(^3P)5s$	$^2P^o - ^2P$	191.375	455.4	522989	6	6	1.52E+09	8.34E-03
			191.808	1366.3	522720	2	4	2.52E+08	2.78E-03
			191.512	1366.3	523527	2	2	1.01E+09	5.57E-03
			191.307	0	522720	4	4	1.27E+09	6.96E-03
			191.012	0	523527	4	2	5.12E+08	1.40E-03
Na III	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^o - ^2D$	189.0285	455.4	529476.06	6	10	3.47E+09	3.10E-02
			189.3468	1366.3	529497.70	2	4	2.87E+09	3.09E-02
			188.8711	0	529461.64	4	6	3.48E+09	2.79E-02
			188.8582	0	529497.70	4	4	5.80E+08	3.10E-03
Na III	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^o - ^2S$	184.100	455.4	543640	6	2	1.45E+10	2.45E-02
			184.409	1366.3	543640	2	2	4.81E+09	2.45E-02
			183.945	0	543640	4	2	9.66E+09	2.45E-02
Na III	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^o - ^2P$	183.895	455.4	544243	6	6	7.36E+09	3.73E-02
			184.210	1366.3	544226	2	4	1.22E+09	1.24E-02
			184.192	1366.3	544278	2	2	4.90E+09	2.49E-02
			183.747	0	544226	4	4	6.16E+09	3.12E-02
			183.730	0	544278	4	2	2.46E+09	6.23E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na III	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^\circ - ^2D$	183.719	455.4	544765	6	10	2.81E+09	2.37E-02
			184.019	1366.3	544788	2	4	2.33E+09	2.37E-02
			183.571	0	544749	4	6	2.81E+09	2.13E-02
			183.558	0	544788	4	4	4.69E+08	2.37E-03
Na III	$2s^2 2p^5 - 2p^4(^1S)4s$	$^2P^\circ - ^2S$	182.6633	455.4	547910.7	6	2	1.35E+08	2.25E-04
			182.9678	1366.3	547910.7	2	2	4.48E+07	2.25E-04
			182.5115	0	547910.7	4	2	9.01E+07	2.25E-04
Na III	$2s^2 2p^5 - 2p^4(^1D)5s$	$^2P^\circ - ^2D$	181.174	455.4	552411	6	10	5.35E+08	4.39E-03
			181.476	1366.3	552404	2	4	4.44E+08	4.38E-03
			181.027	0	552404	4	4	8.94E+07	4.39E-04
			181.023?	0	552416?	4	6	5.37E+08	3.96E-03
Na IV	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	410.4311	543.9	244190.1	9	9	6.61E+09	1.67E-01
			412.2426	1106.3	243681.9	3	5	1.63E+09	6.94E-02
			411.3337	1576.0	244687.6	1	3	2.19E+09	1.67E-01
			410.5405	1106.3	244687.6	3	3	1.65E+09	4.17E-02
			410.3711	0	243681.9	5	5	4.99E+09	1.26E-01
			409.6136	1106.3	245238.8	3	1	6.65E+09	5.58E-02
			408.6844	0	244687.6	5	3	2.79E+09	4.19E-02
Na IV	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	205.7163	543.9	486650.2	9	3	2.49E+10	5.26E-02
			206.1540	1576.0	486650.2	1	3	2.75E+09	5.25E-02
			205.9546	1106.3	486650.2	3	3	8.27E+09	5.26E-02
			205.4864	0	486650.2	5	3	1.39E+10	5.27E-02
Na IV	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	190.635	543.9	525106	9	15	8.10E+09	7.36E-02
			190.999	1576.0	525139	1	3	4.48E+09	7.35E-02
			190.836	1106.3	525117	3	5	6.07E+09	5.52E-02
			190.828	1106.3	525139	3	3	3.37E+09	1.84E-02
			190.445	0	525085	5	7	8.14E+09	6.20E-02
			190.434	0	525117	5	5	2.02E+09	1.10E-02
			190.426	0	525139	5	3	2.26E+08	7.37E-04
Na IV	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P - ^3P^\circ$	181.941	543.9	550173	9	9	8.38E+09	4.16E-02
			182.288	1576.0	550157	1	3	2.78E+09	4.16E-02
			182.133	1106.3	550157	3	3	2.09E+09	1.04E-02
			182.132	1106.3	550158	3	1	8.38E+09	1.39E-02
			182.123	1106.3	550186	3	5	2.10E+09	1.74E-02
			181.766	0	550157	5	3	3.50E+09	1.04E-02
			181.757	0	550186	5	5	6.30E+09	3.12E-02
Na IV	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P - ^3D^\circ$	168.246	543.9	594913	9	15	3.25E+10	2.30E-01
			168.5454	1576.0	594888.1	1	3	1.79E+10	2.29E-01
			168.4120	1106.3	594888.1	3	3	1.35E+10	5.73E-02
			168.4089	1106.3	594899.2	3	5	2.41E+10	1.71E-01
			168.0988	0	594888.1	5	3	9.05E+08	2.30E-03
			168.0957	0	594899.2	5	5	8.14E+09	3.45E-02
			168.086	0	594934	5	7	3.25E+10	1.93E-01
Na IV	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3D^\circ$	156.652	543.9	638901	9	15	2.74E+10	1.68E-01
			156.880	1576.0	639007	1	3	1.51E+10	1.67E-01
			156.780	1106.3	638943	3	5	2.05E+10	1.26E-01
			156.764	1106.3	639007	3	3	1.13E+10	4.18E-02
			156.537	0	638825	5	7	2.74E+10	1.41E-01
			156.508	0	638943	5	5	6.86E+09	2.52E-02
			156.493	0	639007	5	3	7.63E+08	1.68E-03
Na IV	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3P^\circ$	155.609	543.9	643179	9	9	6.17E+10	2.24E-01
			155.828	1576.0	643311	1	3	2.04E+10	2.23E-01
			155.776	1106.3	643052	3	5	1.54E+10	9.33E-02
			155.714	1106.3	643311	3	3	1.54E+10	5.60E-02
			155.687?	1106.3	643420?	3	1	6.17E+10	7.47E-02
			155.508	0	643052	5	5	4.63E+10	1.68E-01
			155.446	0	643311	5	3	2.58E+10	5.61E-02
Na IV	$2s^2 2p^4 - 2p^3(^4S^\circ)4s^*$	$^3P - ^3S^\circ$	155.371	543.9	644166	9	3	6.62E+10	7.99E-02
			155.620	1576.0	644166	1	3	7.32E+09	7.97E-02
			155.507	1106.3	644166	3	3	2.20E+10	7.98E-02
			155.239	0	644166	5	3	3.69E+10	7.99E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na IV	$2s^2 2p^4 - 2p^3(^2D^\circ)3d^*$	$^3P-^3S^\circ$	155.213	543.9	644819	9	3	5.31E+09	6.39E-03
			155.462	1576.0	644819	1	3	5.87E+08	6.38E-03
			155.349	1106.3	644819	3	3	1.77E+09	6.39E-03
			155.082	0	644819	5	3	2.96E+09	6.40E-03
Na IV	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P-^3P^\circ$	150.832	543.9	663531	9	9	1.39E+10	4.75E-02
			151.073	1576.0	663509	1	3	4.62E+09	4.74E-02
			151.050?	1106.3	663137?	3	1	1.39E+10	1.58E-02
			150.966	1106.3	663509	3	3	3.48E+09	1.19E-02
			150.940	1106.3	663623	3	5	3.46E+09	1.97E-02
			150.714	0	663509	5	3	5.82E+09	1.19E-02
			150.688	0	663623	5	5	1.05E+10	3.57E-02
Na IV	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P-^3D^\circ$	150.417	543.9	665364	9	15	2.19E+10	1.24E-01
			150.642	1576.0	665400	1	3	1.21E+10	1.24E-01
			150.543	1106.3	665370	3	5	1.64E+10	9.31E-02
			150.536	1106.3	665400	3	3	9.12E+09	3.10E-02
			150.298	0	665344	5	7	2.21E+10	1.05E-01
			150.292	0	665370	5	5	5.52E+09	1.87E-02
Na IV	$2s^2 2p^4 - 2p^3(^4S^\circ)4d$	$^3P-^3D^\circ$	150.286	0	665400	5	3	6.10E+08	1.24E-03
			146.180	543.9	684631	9	15	2.66E+10	1.42E-01
			146.399	1576.0	684640	1	3	1.47E+10	1.42E-01
			146.302	1106.3	684626	3	5	2.00E+10	1.07E-01
			146.299	1106.3	684640	3	3	1.11E+10	3.56E-02
			146.065	0	684626	5	5	6.66E+09	2.13E-02
			146.064	0	684630	5	7	2.66E+10	1.19E-01
Na IV	$2s^2 2p^4 - 2p^3(^4S^\circ)4d$	$^3P-^3D^\circ$	146.062	0	684640	5	3	7.40E+08	1.42E-03
			145.089	543.9	689776	9	15	1.57E+09	8.27E-03
			145.300	1576.0	689808	1	3	8.70E+08	8.26E-03
			145.205	1106.3	689789	3	5	1.18E+09	6.20E-03
			145.201	1106.3	689808	3	3	6.55E+08	2.07E-03
			144.979	0	689753	5	7	1.58E+09	6.95E-03
			144.972	0	689789	5	5	3.94E+08	1.24E-03
Na IV	$2s^2 2p^4 - 2p^3(^2P^\circ)4s$	$^3P-^3D^\circ$	144.968	0	689808	5	3	4.38E+07	8.28E-05
			140.069	543.9	714476	9	9	3.13E+09	9.21E-03
			140.274	1576.0	714468	1	3	1.04E+09	9.20E-03
			140.181	1106.3	714468	3	3	7.84E+08	2.31E-03
			140.181?	1106.3	714468?	3	1	3.12E+09	3.06E-03
			140.178	1106.3	714483	3	5	7.80E+08	3.83E-03
			139.964	0	714468	5	3	1.31E+09	2.31E-03
Na IV	$2s^2 2p^4 - 2p^3(^2P^\circ)4s$	$^3P-^3P^\circ$	139.961	0	714483	5	5	2.36E+09	6.92E-03
			136.953	543.9	730719	9	15	1.55E+10	7.28E-02
			137.143	1576.0	730742	1	3	8.59E+09	7.27E-02
			137.057	1106.3	730728	3	5	1.16E+10	5.46E-02
			137.055	1106.3	730742	3	3	6.46E+09	1.82E-02
			136.855	0	730702	5	7	1.56E+10	6.12E-02
			136.850	0	730728	5	5	3.88E+09	1.09E-02
Na IV	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P-^3D^\circ$	136.847	0	730742	5	3	4.33E+08	7.29E-04
			136.651	543.9	732333	9	9	2.76E+10	7.73E-02
			136.842	1576.0	732346	1	3	9.17E+09	7.72E-02
			136.758	1106.3	732325	3	5	6.89E+09	3.22E-02
			136.754	1106.3	732346	3	3	6.88E+09	1.93E-02
			136.551	0	732325	5	5	2.08E+10	5.81E-02
			136.547	0	732346	5	3	1.15E+10	1.93E-02
Na IV	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P-^3P^\circ$		1106.3		3	1	2.76E+10	2.58E-02
			136.531	543.9	732979	9	3	3.12E+10	2.91E-02
			136.724	1576.0	732979	1	3	3.46E+09	2.91E-02
			136.636	1106.3	732979	3	3	1.04E+10	2.91E-02
			136.430	0	732979	5	3	1.74E+10	2.91E-02
Na V	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$	461.961	0	216469	4	12	2.27E+09	2.18E-01
			463.263	0	215860	4	6	2.26E+09	1.09E-01
			461.050	0	216896	4	4	2.28E+09	7.27E-02
			459.897	0	217440	4	2	2.30E+09	3.64E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na V	$2s^2 2p^3 - 2p^2(^3P)3s$	$4S^o - ^4P$	148.773	0	672164	4	12	1.30E+10	1.29E-01
			149.001	0	671136	4	2	1.29E+10	2.14E-02
			148.856	0	671790	4	4	1.29E+10	4.29E-02
			148.642	0	672757	4	6	1.30E+10	6.45E-02
Na V	$2s^2 2p^3 - 2p^2(^3P)3d$	$4S^o - ^4P$	125.245	0	798437	4	12	1.57E+11	1.11E+00
			125.286	0	798174	4	6	1.58E+11	5.57E-01
			125.216	0	798620	4	4	1.58E+11	3.71E-01
			125.178	0	798862	4	2	1.58E+11	1.86E-01
Na V	$2s^2 2p^3 - 2p^2(^5S^o)3p$	$4S^o - ^4P$	117.989	0	847539	4	12	2.33E+10	1.46E-01
			117.989	0	847539	4	6	2.34E+10	7.34E-02
			117.989	0	847539	4	4	2.35E+10	4.90E-02
			117.989	0	847539	4	2	2.35E+10	2.45E-02
Na V	$2s^2 2p^3 - 2p^2(^3P)4s$	$4S^o - ^4P$	111.929	0	893425	4	12	4.81E+09	2.71E-02
			112.077	0	892240	4	2	4.80E+09	4.52E-03
			111.879	0	893820	4	6	4.83E+09	1.36E-02
				0		4	4	4.83E+09	9.08E-03
Na V	$2s^2 2p^3 - 2p^2(^3P)4d$	$4S^o - ^4P$	106.292	0	940800	4	12	6.42E+10	3.26E-01
			106.302	0	940720	4	6	6.45E+10	1.64E-01
			106.278	0	940930	4	4	6.44E+10	1.09E-01
				0		4	2	6.45E+10	5.46E-02
Na VI	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3D^o$	492.798	1265	204188	9	15	1.41E+09	8.55E-02
			494.381	1859	204132	5	7	1.39E+09	7.15E-02
			494.159	1859	204223	5	5	3.47E+08	1.27E-02
			494.066	1859	204261	5	3	3.88E+07	8.52E-04
			491.340	698	204223	3	5	1.07E+09	6.43E-02
			491.248	698	204261	3	3	5.91E+08	2.14E-02
			489.570	0	204261	1	3	7.98E+08	8.60E-02
Na VI	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3P^o$	416.535	1265	241341	9	9	3.83E+09	9.95E-02
			417.568	1859	241341	5	5	2.85E+09	7.45E-02
			417.568	1859	241341	5	3	1.59E+09	2.49E-02
			415.553	698	241341	3	3	9.66E+08	2.50E-02
			415.553	698	241341	3	5	9.62E+08	4.15E-02
			415.553	698	241341	3	1	3.85E+09	3.32E-02
			414.351	0	241341	1	3	1.29E+09	1.00E-01
Na VI	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3S^o$	313.162	1265	320589	9	3	2.51E+10	1.23E-01
			313.745	1859	320589	5	3	1.39E+10	1.23E-01
			312.606	698	320589	3	3	8.40E+09	1.23E-01
			311.926	0	320589	1	3	2.83E+09	1.24E-01
Na VI	$2s^2 2p^2 - 2s^2 2p3s$	$^3P - ^3P^o$	123.92	1265	808245	9	9	3.18E+10	7.31E-02
			124.15	1859	807320	5	3	1.32E+10	1.83E-02
			123.97	698	807320	3	3	7.94E+09	1.83E-02
			123.92	1859	808800	5	5	2.38E+10	5.48E-02
			123.87	0	807320	1	3	1.06E+10	7.32E-02
			123.75	698	808800	3	5	8.00E+09	3.06E-02
				698		3	1	3.18E+10	2.44E-02
Na VI	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3D^o$	107.65	1265	930190	9	15	2.54E+11	7.36E-01
			107.7685	1859	929774	5	3	7.04E+09	7.35E-03
			107.74	1859	930000	5	5	6.32E+10	1.10E-01
			107.683	1859	930510	5	7	2.54E+11	6.18E-01
			107.6338	698	929774	3	3	1.06E+11	1.84E-01
			107.61	698	930000	3	5	1.91E+11	5.52E-01
			107.5530	0	929774	1	3	1.41E+11	7.35E-01
Na VI	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3P^o$	107.190	1265	934190	9	9	1.43E+11	2.47E-01
			107.289	1859	933920	5	5	1.07E+11	1.85E-01
			107.227	1859	934460	5	3	5.97E+10	6.17E-02
			107.156	698	933920	3	5	3.59E+10	1.03E-01
			107.094	698	934460	3	3	3.59E+10	6.18E-02
			107.062?	698	934740?	3	1	1.44E+11	8.23E-02
			107.014	0	934460	1	3	4.80E+10	2.47E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na VI	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3S^\circ$	103.138	1265	970840	9	3	5.77E+10	3.07E-02
			103.201	1859	970840	5	3	3.20E+10	3.07E-02
			103.078	698	970840	3	3	1.93E+10	3.08E-02
			103.004	0	970840	1	3	6.45E+09	3.08E-02
Na VI	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3D^\circ$	100.485	1265	996440	9	15	4.72E+10	1.19E-01
			100.588	1859	996010	5	5	1.18E+10	1.79E-02
			100.515	1859	996740	5	7	4.72E+10	1.00E-01
			100.471	698	996010	3	5	3.55E+10	8.96E-02
				0		1	3	2.62E+10	1.19E-01
				698		3	3	1.96E+10	2.97E-02
				1859		5	3	1.31E+09	1.19E-03
Na VI	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3P^\circ$	99.581	1265	1005470	9	9	4.30E+10	6.40E-02
			99.680?	1859	1005070?	5	3	1.78E+10	1.59E-02
			99.616	1859	1005710	5	5	3.22E+10	4.79E-02
			99.565?	698	1005070?	3	3	1.08E+10	1.60E-02
			99.501	698	1005710	3	5	1.08E+10	2.67E-02
			99.496?	0	1005070?	1	3	1.44E+10	6.40E-02
				698		3	1	4.30E+10	2.13E-02
Na VI	$2s^2 2p^2 - 2s 2p^2 (^2D) 3p$	$^3P - ^3D^\circ$	96.251	1265	1040220	9	15	2.66E+09	6.15E-03
			96.306	1859	1040220	5	7	2.65E+09	5.16E-03
			96.306	1859	1040220	5	5	6.62E+08	9.21E-04
			96.306	1859	1040220	5	3	7.36E+07	6.14E-05
			96.198	698	1040220	3	5	1.99E+09	4.61E-03
			96.198	698	1040220	3	3	1.10E+09	1.53E-03
			96.134	0	1040220	1	3	1.48E+09	6.15E-03
Na VI	$2s^2 2p^2 - 2s^2 2p 4s$	$^3P - ^3P^\circ$	91.786	1265	1090760	9	9	1.11E+10	1.40E-02
			91.836	1859	1090760	5	5	8.38E+09	1.06E-02
			91.738	698	1090760	3	5	2.79E+09	5.86E-03
				698		3	3	2.79E+09	3.53E-03
				1859		5	3	4.66E+09	3.53E-03
				698		3	1	1.12E+10	4.70E-03
				0		1	3	3.72E+09	1.41E-02
Na VI	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3D^\circ$	88.266	1265	1134200	9	15	1.02E+11	1.98E-01
			88.368	1859	1133490	5	3	2.82E+09	1.98E-03
			88.338	1859	1133870	5	5	2.54E+10	2.97E-02
			88.277	698	1133490	3	3	4.23E+10	4.94E-02
			88.270	1859	1134750	5	7	1.02E+11	1.66E-01
			88.248	698	1133870	3	5	7.61E+10	1.48E-01
			88.223	0	1133490	1	3	5.66E+10	1.98E-01
Na VI	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3P^\circ$	88.097	1265	1136380	9	9	3.89E+10	4.53E-02
			88.143	1859	1136380	5	5	2.91E+10	3.39E-02
			88.053	698	1136380	3	5	9.70E+09	1.88E-02
				698		3	3	9.71E+09	1.13E-02
				1859		5	3	1.62E+10	1.13E-02
				698		3	1	3.89E+10	1.51E-02
				0		1	3	1.29E+10	4.52E-02
Na VI	$2s^2 2p^2 - 2s^2 2p 5d$	$^3P - ^3D^\circ$	81.5033	1265	1228210	9	15	3.91E+10	6.49E-02
			81.5427?	1859	1228210?	5	7	3.91E+10	5.45E-02
				698		3	5	2.93E+10	4.87E-02
				0		1	3	2.18E+10	6.50E-02
				1859		5	5	9.79E+09	9.75E-03
				698		3	3	1.63E+10	1.62E-02
				1859		5	3	1.09E+09	6.50E-04
Na VII	$2s^2 2p - 2s 2p^2$	$^2P^\circ - ^2D$	490.195	1426	205426	6	10	1.37E+09	8.23E-02
			491.949	2139	205412	4	6	1.36E+09	7.38E-02
			491.862	2139	205448	4	4	2.26E+08	8.21E-03
			486.741	0	205448	2	4	1.17E+09	8.29E-02
Na VII	$2s^2 2p - 2s 2p^2$	$^2P^\circ - ^2S$	380.27	1426	264400	6	2	6.23E+09	4.50E-02
			381.30	2139	264400	4	2	4.12E+09	4.49E-02
			378.21	0	264400	2	2	2.11E+09	4.53E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na VII	$2s^2 2p-2s2p^2$	$^2P^\circ-^2P$	352.954	1426	284749	6	6	1.20E+10	2.25E-01
			354.950	2139	283869	4	2	3.94E+09	3.72E-02
			353.294	2139	285189	4	4	1.00E+10	1.88E-01
			352.275	0	283869	2	2	8.06E+09	1.50E-01
			350.645	0	285189	2	4	2.05E+09	7.54E-02
Na VII	$2s^2 2p-2s^2 3s$	$^2P^\circ-^2S$	105.272	1426	951350	6	2	4.88E+10	2.70E-02
			105.351	2139	951350	4	2	3.25E+10	2.70E-02
			105.114	0	951350	2	2	1.64E+10	2.71E-02
Na VII	$2s^2 2p-2s^2 3d$	$^2P^\circ-^2D$	94.409	1426	1060650	6	10	2.65E+11	5.91E-01
			94.479	2139	1060580	4	4	4.42E+10	5.91E-02
			94.468	2139	1060700	4	6	2.65E+11	5.32E-01
			94.288	0	1060580	2	4	2.22E+11	5.92E-01
Na VII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2P$	88.826	1426	1127220	6	6	9.55E+10	1.13E-01
			88.915	2139	1126810	4	2	3.17E+10	1.88E-02
			88.866	2139	1127430	4	4	7.95E+10	9.41E-02
			88.746	0	1126810	2	2	6.39E+10	7.54E-02
			88.697	0	1127430	2	4	1.60E+10	3.78E-02
Na VII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2D$	86.6405	1426	1155620	6	10	1.00E+11	1.88E-01
			86.7573	2139	1154780	4	4	1.67E+10	1.88E-02
			86.6520	2139	1156180	4	6	1.01E+11	1.70E-01
			86.5966	0	1154780	2	4	8.41E+10	1.89E-01
Na VII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2S$	85.4034	1426	1172340	6	2	9.60E+10	3.50E-02
			85.4554	2139	1172340	4	2	6.39E+10	3.50E-02
			85.2995	0	1172340	2	2	3.22E+10	3.51E-02
Na VII	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2D$	79.9713	1426	1251870	6	10	1.17E+10	1.87E-02
			80.0300	2139	1251670	4	4	1.95E+09	1.87E-03
			80.0083	2139	1252010	4	6	1.17E+10	1.68E-02
			79.8933	0	1251670	2	4	9.77E+09	1.87E-02
Na VII	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2P$	79.8588	1426	1253640	6	6	3.33E+10	3.18E-02
			79.9226	2139	1253350	4	2	1.11E+10	5.31E-03
			79.8951	2139	1253780	4	4	2.77E+10	2.65E-02
			79.7862	0	1253350	2	2	2.22E+10	2.12E-02
			79.7588	0	1253780	2	4	5.56E+09	1.06E-02
Na VII	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2S$	79.5258	1426	1258880	6	2	4.02E+10	1.27E-02
			79.5709	2139	1258880	4	2	2.68E+10	1.27E-02
			79.4357	0	1258880	2	2	1.34E+10	1.27E-02
Na VII	$2s^2 2p-2s^2 4s$	$^2P^\circ-^2S$	77.3106	1426	1294910	6	2	3.92E+09	1.17E-03
			77.3532	2139	1294910	4	2	2.61E+09	1.17E-03
			77.2254	0	1294910	2	2	1.31E+09	1.17E-03
Na VII	$2s^2 2p-2p^2(^1D)3s$	$^2P^\circ-^2D$	75.1760	1426	1331640	6	10	1.79E+09	2.53E-03
			75.2445	2139	1331140	4	4	2.98E+08	2.53E-04
			75.1975	2139	1331970	4	6	1.79E+09	2.28E-03
			75.1236	0	1331140	2	4	1.50E+09	2.54E-03
Na VII	$2s^2 2p-2s^2 4d$	$^2P^\circ-^2D$	74.9403	1426	1335820	6	10	8.69E+10	1.22E-01
			74.9810	2139	1335810	4	4	1.45E+10	1.22E-02
			74.9799	2139	1335830	4	6	8.70E+10	1.10E-01
			74.8609	0	1335810	2	4	7.26E+10	1.22E-01
Na VII	$2s^2 2p-2p^2(^3P)3d$	$^2P^\circ-^2D$	71.9930	1426	1390450	6	10	1.14E+10	1.47E-02
			72.0300?	2139	1390450?	4	6	1.13E+10	1.32E-02
			72.0300?	2139	1390450?	4	4	1.89E+09	1.47E-03
			71.9192?	0	1390450?	2	4	9.48E+09	1.47E-02
Na VII	$2s^2 2p-2p^2(^1D)3d$	$^2P^\circ-^2D$	70.7112	1426	1415630	6	10	6.12E+09	7.65E-03
			70.7468	2139	1415630	4	6	6.11E+09	6.88E-03
			70.7468	2139	1415630	4	4	1.02E+09	7.65E-04
			70.6399	0	1415630	2	4	5.12E+09	7.66E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na VII	$2s^2 2p-2s2p(^3P^o)4p:*$	$^2P^o-^2P$	69.8799	1426	1432450	6	6	4.34E+10	3.18E-02
			69.9300	2139	1432140	4	2	1.45E+10	5.30E-03
			69.9070	2139	1432610	4	4	3.63E+10	2.66E-02
			69.8256	0	1432140	2	2	2.90E+10	2.12E-02
			69.8027	0	1432610	2	4	7.32E+09	1.07E-02
Na VII	$2s^2 2p-2p^2(^1D)3d:*$	$^2P^o-^2P$	69.3678	1426	1443020	6	6	3.84E+09	2.77E-03
			69.4169	2139	1442710	4	2	1.28E+09	4.61E-04
			69.3948	2139	1443170	4	4	3.20E+09	2.31E-03
			69.3140	0	1442710	2	2	2.55E+09	1.84E-03
			69.2919	0	1443170	2	4	6.42E+08	9.24E-04
Na VII	$2s^2 2p-2s2p(^3P^o)4p$	$^2P^o-^2D$	68.8979	1426	1452850	6	10	3.87E+10	4.59E-02
			68.9674	2139	1452100	4	4	6.44E+09	4.59E-03
			68.9080	2139	1453350	4	6	3.88E+10	4.14E-02
			68.8658	0	1452100	2	4	3.23E+10	4.59E-02
Na VII	$2s^2 2p-2s^2 5d$	$^2P^o-^2D$	68.4868	1426	1461560	6	10	3.98E+10	4.66E-02
			68.5222	2139	1461520	4	4	6.62E+09	4.66E-03
			68.5189	2139	1461590	4	6	3.98E+10	4.20E-02
			68.4219	0	1461520	2	4	3.32E+10	4.66E-02
Na VII	$2s^2 2p-2s^2 6d$	$^2P^o-^2D$	65.4436	1426	1529460	6	10	2.35E+10	2.52E-02
			65.4741	2139	1529460	4	6	2.34E+10	2.26E-02
			65.4741	2139	1529460	4	4	3.92E+09	2.52E-03
			65.3826	0	1529460	2	4	1.97E+10	2.53E-02
Na VII	$2s^2 2p-2s2p(^1P^o)4p$	$^2P^o-^2D$	64.0835	1426	1561890	6	10	1.26E+10	1.29E-02
			64.1128?	2139	1561890?	4	6	1.25E+10	1.16E-02
			64.1128?	2139	1561890?	4	4	2.09E+09	1.29E-03
			64.0250?	0	1561890?	2	4	1.05E+10	1.29E-02
Na VII	$2s^2 2p-2s^2 7d$	$^2P^o-^2D$	63.7489	1426	1570080	6	10	1.39E+10	1.41E-02
			63.7779	2139	1570080	4	6	1.39E+10	1.27E-02
			63.7779	2139	1570080	4	4	2.31E+09	1.41E-03
			63.6910	0	1570080	2	4	1.16E+10	1.41E-02
Na VII	$2s^2 2p-2s2p(^3P^o)5p$	$^2P^o-^2P$	63.4146	1426	1578350	6	6	2.87E+10	1.73E-02
			63.4433	2139	1578350	4	4	2.39E+10	1.44E-02
			63.4433	2139	1578350	4	2	9.61E+09	2.90E-03
			63.3573	0	1578350	2	2	1.93E+10	1.16E-02
			63.3573	0	1578350	2	4	4.82E+09	5.80E-03
Na VII	$2s^2 2p-2s2p(^3P^o)5p$	$^2P^o-^2D$	63.1986	1426	1583740	6	10	1.98E+10	1.98E-02
			63.2271	2139	1583740	4	6	1.97E+10	1.77E-02
			63.2271	2139	1583740	4	4	3.29E+09	1.97E-03
			63.1417	0	1583740	2	4	1.66E+10	1.98E-02
Na VII	$2s^2 2p-2s^2 8d$	$^2P^o-^2D$	62.697	1426	1596400	6	10	9.01E+09	8.85E-03
			62.725	2139	1596400	4	6	9.00E+09	7.96E-03
			62.725	2139	1596400	4	4	1.50E+09	8.84E-04
			62.641	0	1596400	2	4	7.52E+09	8.85E-03
Na VIII	$2s^2-2s2p$	$^1S-^1P^o$	411.171	0	243208	1	3	4.58E+09	3.48E-01
Na VIII	$2s^2-2s3p$	$^1S-^1P^o$	77.2660	0	1294230	1	3	1.93E+11	5.17E-01
Na VIII	$2s^2-2p3s$	$^1S-^1P^o$	70.1201	0	1426125	1	3	4.44E+09	9.82E-03
Na VIII	$2s^2-2p3d$	$^1S-^1P^o$	66.0620	0	1513730	1	3	1.78E+10	3.50E-02
Na VIII	$2s^2-2s4p$	$^1S-^1P^o$	59.7589	0	1673390	1	3	8.47E+10	1.36E-01
Na VIII	$2s^2-2s5p$	$^1S-^1P^o$	54.3800	0	1838910	1	3	4.44E+10	5.91E-02
Na VIII	$2s^2-2p4d$	$^1S-^1P^o$	54.2561	0	1843110	1	3	6.51E+09	8.62E-03
Na VIII	$2s^2-2s6p$	$^1S-^1P^o$	51.7891	0	1930910	1	3	2.62E+10	3.16E-02
Na IX	$1s^2 2s-1s^2 2p$	$^2S-^2P^o$	685.810	0	145813	2	6	6.48E+08	1.37E-01
			694.146	0	144062	2	2	6.28E+08	4.54E-02
			681.719	0	146688	2	4	6.63E+08	9.24E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na IX	$1s^2 2s-1s^2 3p$	$^2S-^2P^o$	70.6274	0	1415880	2	6	1.40E+11	3.15E-01
			70.6529	0	1415370	2	2	1.40E+11	1.05E-01
			70.6150	0	1416130	2	4	1.40E+11	2.10E-01
Na IX	$1s^2 2s-1s^2 4p$	$^2S-^2P^o$	53.8602	0	1856660	2	6	6.41E+10	8.37E-02
			53.8665	0	[1856440]	2	2	6.41E+10	2.79E-02
			53.8570	0	[1856770]	2	4	6.42E+10	5.58E-02
Na IX	$1s^2 2s-1s^2 5p$	$^2S-^2P^o$	48.5531	0	2059600	2	6	3.34E+10	3.54E-02
			48.5531	0	2059600	2	4	3.32E+10	2.35E-02
			48.5531	0	2059600	2	2	3.34E+10	1.18E-02
Na IX	$1s^2 2s-1s^2 6p$	$^2S-^2P^o$	46.0900	0	2169670	2	6	1.94E+10	1.85E-02
			46.0900	0	2169670	2	4	1.95E+10	1.24E-02
			46.0900	0	2169670	2	2	1.94E+10	6.19E-03
Na IX	$1s^2 2s-1s^2 7p$	$^2S-^2P^o$	44.7249	0	2235890	2	6	1.22E+10	1.10E-02
			44.7249	0	2235890	2	4	1.22E+10	7.34E-03
			44.7249	0	2235890	2	2	1.23E+10	3.68E-03
Na X	$1s^2-1s2p$	$^1S-^1P^o$	11.0027	0	[9088700]	1	3	1.35E+13	7.34E-01
Na X	$1s^2-1s3p$	$^1S-^1P^o$	9.4330	0	[10601080]	1	3	3.75E+12	1.50E-01
Na X	$1s^2-1s4p$	$^1S-^1P^o$	8.9828	0	[11132393]	1	3	1.55E+12	5.63E-02
Na X	$1s^2-1s5p$	$^1S-^1P^o$	8.7884	0	[11378646]	1	3	7.83E+11	2.72E-02
Na X	$1s^2-1s6p$	$^1S-^1P^o$	8.6862	0	[11512505]	1	3	4.51E+11	1.53E-02
Na X	$1s^2-1s7p$	$^1S-^1P^o$	8.6257	0	[11593248]	1	3	2.84E+11	9.50E-03
Na X	$1s^2-1s8p$	$^1S-^1P^o$	8.5869	0	[11645667]	1	3	1.90E+11	6.30E-03
Na X	$1s^2-1s9p$	$^1S-^1P^o$	8.5605	0	[11681612]	1	3	1.33E+11	4.40E-03
Na X	$1s^2-1s10p$	$^1S-^1P^o$	8.5417	0	[11707327]	1	3	9.69E+10	3.18E-03
Na XI	$1s-2p$	$^2S-^2P^o$	10.0250	0	9975072	2	6	9.20E+12	4.16E-01
			10.0286	0	[9971485]	2	2	9.22E+12	1.39E-01
			10.0232	0	[9976866]	2	4	9.20E+12	2.77E-01
Na XI	$1s-3p$	$^2S-^2P^o$	8.4595	0	11821028	2	6	2.45E+12	7.90E-02
			8.4603	0	[11819965]	2	2	2.45E+12	2.63E-02
			8.4591	0	[11821559]	2	4	2.46E+12	5.27E-02
Na XI	$1s-4p$	$^2S-^2P^o$	8.0211	0	12467162	2	6	1.00E+12	2.90E-02
			8.0214	0	[12466714]	2	2	1.00E+12	9.67E-03
			8.0209	0	[12467386]	2	4	1.00E+12	1.93E-02
Na XI	$1s-5p$	$^2S-^2P^o$	7.8332	0	12766202	2	6	5.04E+11	1.39E-02
			7.8333	0	[12765972]	2	2	5.05E+11	4.65E-03
			7.8331	0	[12766317]	2	4	5.05E+11	9.30E-03
Na XI	$1s-6p$	$^2S-^2P^o$	7.7348	0	12928627	2	6	2.90E+11	7.80E-03
			7.7349	0	[12928494]	2	2	2.90E+11	2.60E-03
			7.7347	0	[12928693]	2	4	2.90E+11	5.20E-03
Na XI	$1s-7p$	$^2S-^2P^o$	7.6766	0	13026555	2	6	1.82E+11	4.82E-03
			7.6767	0	[13026471]	2	2	1.81E+11	1.60E-03
			7.6766	0	[13026597]	2	4	1.82E+11	3.21E-03
Na XI	$1s-8p$	$^2S-^2P^o$	7.6394	0	13090109	2	6	1.22E+11	3.19E-03
			7.6394	0	[13090053]	2	2	1.21E+11	1.06E-03
			7.6393	0	[13090137]	2	4	1.21E+11	2.12E-03
Na XI	$1s-9p$	$^2S-^2P^o$	7.6140	0	13133679	2	6	8.51E+10	2.22E-03
			7.6140	0	[13133698]	2	4	8.51E+10	1.48E-03
			7.6140	0	[13133639]	2	2	8.49E+10	7.38E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Na XI	$1s-10p$	$^2S-^2P^o$	7.5960	0	13164842	2	6	6.17E+10	1.60E-03
			7.5960	0	[13164857]	2	4	6.18E+10	1.07E-03
			7.5960	0	[13164814]	2	2	6.18E+10	5.35E-04
Mg I	$3s^2-3s3p$	$^1S-^1P^o$	2852.9642	0	35051.264	1	3	4.73E+08	1.73E+00
Mg I	$3s^2-3s4p$	$^1S-^1P^o$	2026.4768	0	49346.729	1	3	6.61E+07	1.22E-01
Mg I	$3s^2-3s5p$	$^1S-^1P^o$	1827.9351	0	54706.536	1	3	1.88E+07	2.83E-02
Mg I	$3s^2-3s6p$	$^1S-^1P^o$	1747.7937	0	57214.992	1	3	7.42E+06	1.02E-02
Mg I	$3s^2-3s7p$	$^1S-^1P^o$	1707.061	0	58580.23	1	3	3.70E+06	4.85E-03
Mg I	$3s^2-3s8p$	$^1S-^1P^o$	1683.412	0	59403.18	1	3	2.13E+06	2.71E-03
Mg I	$3s^2-3s9p$	$^1S-^1P^o$	1668.429	0	59936.63	1	3	1.33E+06	1.67E-03
Mg I	$3s^2-3s10p$	$^1S-^1P^o$	1658.312	0	60302.30	1	3	8.97E+05	1.11E-03
Mg I	$3s^2-3s11p$	$^1S-^1P^o$	1651.164	0	60563.35	1	3	6.34E+05	7.77E-04
Mg II	$2p^63s-2p^63p$	$^2S-^2P^o$	2798.741	0	35730.36	2	6	2.67E+08	9.42E-01
			2803.531	0	35669.31	2	2	2.66E+08	3.14E-01
			2796.352	0	35760.88	2	4	2.68E+08	6.29E-01
Mg II	$2p^63s-2p^64p$	$^2S-^2P^o$	1240.082	0	80639.85	2	6	8.07E+05	5.58E-04
			1240.395	0	80619.50	2	2	8.02E+05	1.85E-04
			1239.925	0	80650.02	2	4	8.07E+05	3.72E-04
Mg II	$2p^63s-2p^65p$	$^2S-^2P^o$	1026.0165	0	97464.32	2	6	2.96E+06	1.40E-03
			1026.1134	0	97455.12	2	2	2.96E+06	4.68E-04
			1025.9681	0	97468.92	2	4	2.97E+06	9.36E-04
Mg II	$2p^63s-2p^66p$	$^2S-^2P^o$	946.7253	0	105627.26	2	6	2.48E+06	9.98E-04
			946.7694	0	105622.34	2	2	2.47E+06	3.32E-04
			946.7033	0	105629.72	2	4	2.47E+06	6.65E-04
Mg II	$2p^63s-2p^67p$	$^2S-^2P^o$	907.3873	0	110206.52	2	6	1.79E+06	6.63E-04
			907.4115	0	110203.58	2	2	1.79E+06	2.21E-04
			907.3752	0	110207.99	2	4	1.79E+06	4.42E-04
Mg II	$2p^63s-2p^68p$	$^2S-^2P^o$	884.7041	0	113032.14	2	6	1.28E+06	4.49E-04
			884.7189	0	113030.25	2	2	1.28E+06	1.50E-04
			884.6967	0	113033.09	2	4	1.28E+06	3.00E-04
Mg II	$2p^63s-2p^69p$	$^2S-^2P^o$	870.3366	0	114898.08	2	6	9.28E+05	3.16E-04
			870.3463	0	114896.79	2	2	9.25E+05	1.05E-04
			870.3317	0	114898.72	2	4	9.29E+05	2.11E-04
Mg II	$2p^63s-2p^610p$	$^2S-^2P^o$	860.6249	0	116194.6	2	6	6.87E+05	2.29E-04
			860.6319	0	[116193.7]	2	2	6.86E+05	7.62E-05
			860.6215	0	[116195.1]	2	4	6.89E+05	1.53E-04
Mg III	$2s^22p^6-2p^53s$	$^1S-^1P^o$	231.7336	0	431530.0	1	3	9.90E+09	2.39E-01
Mg III	$2s^22p^6-2p^53d$	$^1S-^1P^o$	186.5143	0	536152.0	1	3	3.03E+10	4.74E-01
Mg IV	$2s^22p^5-2s2p^6$	$^2P^o-^2S$	321.761	742.7	311532	6	2	1.68E+10	8.69E-02
			323.307	2228	311532	2	2	5.52E+09	8.65E-02
			320.994	0	311532	4	2	1.13E+10	8.71E-02
Mg IV	$2s^22p^5-2p^4(^3P)3s$	$^2P^o-^2P$	180.674	742.7	554224.7	6	6	2.47E+10	1.21E-01
			181.344	2228	553666.1	2	4	4.06E+09	4.00E-02
			180.795	2228	555341.9	2	2	1.64E+10	8.03E-02
			180.6143	0	553666.1	4	4	2.07E+10	1.01E-01
			180.0693	0	555341.9	4	2	8.31E+09	2.02E-02
Mg IV	$2s^22p^5-2p^4(^1D)3s$	$^2P^o-^2D$	171.873	742.7	582568.8	6	10	9.65E+09	7.12E-02
			172.310	2228	582578.4	2	4	7.98E+09	7.10E-02
			171.6554	0	582562.4	4	6	9.69E+09	6.42E-02
			171.6507	0	582578.4	4	4	1.61E+09	7.13E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg IV	$2s^2 2p^5 - 2p^4(^1S)3s$	$^2P^o - ^2S$	160.419	742.7	624109.6	6	2	1.02E+10	1.31E-02
			160.802	2228	624109.6	2	2	3.38E+09	1.31E-02
			160.2283	0	624109.6	4	2	6.86E+09	1.32E-02
Mg IV	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2D$	147.153	742.7	680309.4	6	10	6.06E+10	3.28E-01
			147.535	2228	680033.7	2	4	5.01E+10	3.27E-01
			147.0515	0	680033.7	4	4	1.01E+10	3.28E-02
			146.9522	0	680493.2	4	6	6.10E+10	2.96E-01
Mg IV	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2P$	146.790	742.7	681989.6	6	6	2.62E+10	8.47E-02
			147.320	2228	681023.3	2	2	1.73E+10	5.62E-02
			147.006	2228	682472.8	2	4	4.35E+09	2.82E-02
			146.8379	0	681023.3	4	2	8.72E+09	1.41E-02
			146.5260	0	682472.8	4	4	2.20E+10	7.07E-02
Mg IV	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2P$	140.652	742.7	711715.3	6	6	5.56E+10	1.65E-01
			140.963	2228	711632.7	2	4	9.20E+09	5.48E-02
			140.914	2228	711880.5	2	2	3.69E+10	1.10E-01
			140.5219	0	711632.7	4	4	4.63E+10	1.37E-01
			140.4730	0	711880.5	4	2	1.85E+10	2.74E-02
Mg IV	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2S$	140.571	742.7	712124.5	6	2	8.00E+10	7.90E-02
			140.866	2228	712124.5	2	2	2.65E+10	7.89E-02
			140.4249	0	712124.5	4	2	5.35E+10	7.91E-02
Mg IV	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2D$	140.296	742.7	713519.6	6	10	2.89E+10	1.42E-01
			140.557	2228	713682.5	2	4	2.40E+10	1.42E-01
			140.1717	0	713411.0	4	6	2.90E+10	1.28E-01
			140.1183	0	713682.5	4	4	4.82E+09	1.42E-02
Mg IV	$2s^2 2p^5 - 2p^4(^3P)4s$	$^2P^o - ^2P$	138.305	742.7	723783.6	6	6	7.95E+09	2.28E-02
			138.689	2228	723267.3	2	4	1.32E+09	7.59E-03
			138.391	2228	724816.3	2	2	5.29E+09	1.52E-02
			138.2615	0	723267.3	4	4	6.63E+09	1.90E-02
			137.9660	0	724816.3	4	2	2.68E+09	3.82E-03
Mg IV	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^o - ^2D$	132.941	742.7	752958.0	6	10	1.02E+10	4.50E-02
			133.197	2228	752997.4	2	4	8.44E+09	4.49E-02
			132.8142	0	752931.7	4	6	1.02E+10	4.05E-02
			132.8026	0	752997.4	4	4	1.70E+09	4.50E-03
Mg IV	$2s^2 2p^5 - 2p^4(^1D)4s$	$^2P^o - ^2D$	132.253	742.7	756870.0	6	10	5.88E+08	2.57E-03
			132.512	2228	756875.8	2	4	4.86E+08	2.56E-03
			132.1238	0	756866.1	4	6	5.88E+08	2.31E-03
			132.1221	0	756875.8	4	4	9.82E+07	2.57E-04
Mg IV	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2D$	130.027	742.7	769813	6	10	3.91E+10	1.65E-01
			130.345	2228	769421	2	4	3.24E+10	1.65E-01
			129.968	0	769421	4	4	6.52E+09	1.65E-02
			129.857	0	770075	4	6	3.90E+10	1.48E-01
Mg IV	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2P$	129.925	742.7	770417	6	6	2.01E+10	5.09E-02
			130.356	2228	769356	2	2	1.33E+10	3.39E-02
			130.086	2228	770948	2	4	3.33E+09	1.69E-02
			129.979	0	769356	4	2	6.70E+09	8.48E-03
			129.710	0	770948	4	4	1.69E+10	4.26E-02
Mg IV	$2s^2 2p^5 - 2p^4(^3P)5s$	$^2P^o - ^2P$	126.854	742.7	789048	6	6	3.85E+09	9.28E-03
			127.161	2228	788632	2	4	6.37E+08	3.09E-03
			126.959	2228	789881	2	2	2.56E+09	6.18E-03
			126.802	0	788632	4	4	3.21E+09	7.73E-03
			126.601	0	789881	4	2	1.28E+09	1.54E-03
Mg IV	$2s^2 2p^5 - 2p^4(^1S)4s$	$^2P^o - ^2S$	125.579	742.7	797056	6	2	1.42E+10	1.12E-02
			125.813	2228	797056	2	2	4.72E+09	1.12E-02
			125.462	0	797056	4	2	9.49E+09	1.12E-02
Mg IV	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^o - ^2P$	124.763	742.7	802265	6	6	1.74E+10	4.05E-02
			124.998	2228	802244	2	4	2.88E+09	1.35E-02
			124.988	2228	802306	2	2	1.15E+10	2.70E-02
			124.650	0	802244	4	4	1.46E+10	3.39E-02
			124.641	0	802306	4	2	5.80E+09	6.76E-03



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg IV	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^o - ^2D$	124.649	742.7	802994	6	10	6.18E+09	2.40E-02
			124.871	2228	803054	2	4	5.13E+09	2.40E-02
			124.540	0	802954	4	6	6.19E+09	2.16E-02
			124.525	0	803054	4	4	1.04E+09	2.41E-03
Mg IV	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^o - ^2S$	124.531	742.7	803754	6	2	2.84E+10	2.20E-02
			124.762	2228	803754	2	2	9.43E+09	2.20E-02
			124.416	0	803754	4	2	1.90E+10	2.20E-02
Mg IV	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^o - ^2D$	123.340	742.7	811509	6	10	2.39E+10	9.07E-02
			123.508	2228	811892	2	4	1.98E+10	9.06E-02
			123.266	0	811254	4	6	2.39E+10	8.17E-02
			123.169	0	811892	4	4	3.99E+09	9.08E-03
Mg IV	$2s^2 2p^5 - 2p^4(^1D)5s$	$^2P^o - ^2D$	121.656	742.7	822734	6	10	1.32E+09	4.89E-03
			121.876	2228	822734	2	4	1.10E+09	4.88E-03
			121.546	0	822734	4	4	2.21E+08	4.89E-04
				0		4	6	1.32E+09	4.40E-03
Mg IV	$2s^2 2p^5 - 2p^4(^1D)5d$	$^2P^o - ^2P$	118.588	742.7	843995	6	6	5.60E+09	1.18E-02
			118.801	2228	843974	2	4	9.29E+08	3.93E-03
			118.792	2228	844036	2	2	3.71E+09	7.84E-03
			118.487	0	843974	4	4	4.67E+09	9.84E-03
			118.478	0	844036	4	2	1.86E+09	1.96E-03
Mg IV	$2s^2 2p^5 - 2p^4(^1S)4d$	$^2P^o - ^2D$	118.528	742.7	844424	6	10	6.38E+09	2.24E-02
			118.737	2228	844424	2	4	5.28E+09	2.23E-02
			118.424	0	844424	4	6	6.40E+09	2.02E-02
			118.424	0	844424	4	4	1.07E+09	2.24E-03
Mg V	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^o$	353.1645	874.6	284028.7	9	9	8.45E+09	1.58E-01
			355.3292	1783.1	283212.3	3	5	2.07E+09	6.53E-02
			354.2249	2521.8	284828.3	1	3	2.78E+09	1.57E-01
			353.3005	1783.1	284828.3	3	3	2.11E+09	3.94E-02
			353.0920	0	283212.3	5	5	6.31E+09	1.18E-01
			352.2009	1783.1	285712.0	3	1	8.50E+09	5.27E-02
			351.0887	0	284828.3	5	3	3.57E+09	3.96E-02
Mg V	$2s^2 2p^4 - 2p^3(^4S^o)3s$	$^3P - ^3S^o$	146.270	874.6	684541	9	3	4.73E+10	5.06E-02
			146.623	2521.8	684541	1	3	5.22E+09	5.05E-02
			146.465	1783.1	684541	3	3	1.57E+10	5.05E-02
			146.083	0	684541	5	3	2.64E+10	5.07E-02
Mg V	$2s^2 2p^4 - 2p^3(^2D^o)3s$	$^3P - ^3D^o$	137.574	874.6	727757	9	15	1.54E+10	7.26E-02
			137.882	2521.8	727782	1	3	8.47E+09	7.24E-02
			137.745	1783.1	727763	3	5	1.15E+10	5.43E-02
			137.741	1783.1	727782	3	3	6.36E+09	1.81E-02
			137.411	0	727742	5	7	1.54E+10	6.10E-02
			137.407	0	727763	5	5	3.85E+09	1.09E-02
			137.404	0	727782	5	3	4.28E+08	7.27E-04
Mg V	$2s^2 2p^4 - 2p^3(^2P^o)3s$	$^3P - ^3P^o$	132.322	874.6	756605	9	9	1.57E+10	4.11E-02
			132.618	2521.8	756566	1	3	5.18E+09	4.10E-02
			132.492	1783.1	756545	3	1	1.56E+10	1.37E-02
			132.488	1783.1	756566	3	3	3.88E+09	1.02E-02
			132.475	1783.1	756641	3	5	3.90E+09	1.71E-02
			132.176	0	756566	5	3	6.55E+09	1.03E-02
			132.163	0	756641	5	5	1.18E+10	3.09E-02
Mg V	$2s^2 2p^4 - 2p^3(^4S^o)3d$	$^3P - ^3D^o$	121.781	874.6	822022	9	15	6.99E+10	2.59E-01
			122.033	2521.8	821974	1	3	3.85E+10	2.58E-01
			121.923	1783.1	821974	3	3	2.89E+10	6.45E-02
			121.921	1783.1	821989	3	5	5.20E+10	1.93E-01
			121.658	0	821974	5	3	1.95E+09	2.59E-03
			121.656	0	821989	5	5	1.75E+10	3.88E-02
			121.645	0	822066	5	7	6.99E+10	2.17E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg V	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3D^\circ$	114.887	874.6	871298	9	15	7.37E+10	2.43E-01
			115.092	2521.8	871390	1	3	4.06E+10	2.42E-01
			114.999	1783.1	871357	3	5	5.54E+10	1.83E-01
			114.994	1783.1	871390	3	3	3.06E+10	6.07E-02
			114.782	0	871216	5	7	7.38E+10	2.04E-01
			114.764	0	871357	5	5	1.85E+10	3.65E-02
			114.759	0	871390	5	3	2.05E+09	2.43E-03
Mg V	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3P^\circ$	114.135	874.6	877032	9	9	1.47E+11	2.87E-01
			114.317	2521.8	877283	1	3	4.87E+10	2.86E-01
			114.284	1783.1	876795	3	5	3.65E+10	1.19E-01
			114.220	1783.1	877283	3	3	3.66E+10	7.16E-02
			114.197	1783.1	877463	3	1	1.46E+11	9.53E-02
			114.052	0	876795	5	5	1.10E+11	2.15E-01
			113.988	0	877283	5	3	6.13E+10	7.17E-02
Mg V	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3S^\circ$	113.812	874.6	879515	9	3	1.50E+11	9.69E-02
			114.026	2521.8	879515	1	3	1.65E+10	9.67E-02
			113.930	1783.1	879515	3	3	4.97E+10	9.68E-02
			113.699	0	879515	5	3	8.34E+10	9.70E-02
Mg V	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P-^3P^\circ$	111.3225	874.6	899165	9	9	2.72E+10	5.06E-02
			111.5523	2521.8	898962	1	3	9.02E+09	5.05E-02
			111.4860	1783.1	898757	3	1	2.72E+10	1.69E-02
			111.4605	1783.1	898962	3	3	6.82E+09	1.27E-02
			111.4099	1783.1	899369	3	5	6.80E+09	2.11E-02
			111.2394	0	898962	5	3	1.14E+10	1.27E-02
			111.1891	0	899369	5	5	2.05E+10	3.80E-02
Mg V	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P-^3D^\circ$	110.9239	874.6	902394	9	15	6.21E+10	1.91E-01
			111.0810	2521.8	902766	1	3	3.44E+10	1.91E-01
			111.0216	1783.1	902509	3	5	4.64E+10	1.43E-01
			110.9899	1783.1	902766	3	3	2.58E+10	4.77E-02
			110.8461	0	902152	5	7	6.24E+10	1.61E-01
			110.8022	0	902509	5	5	1.56E+10	2.87E-02
			110.7707	0	902766	5	3	1.73E+09	1.91E-03
Mg V	$2s^2 2p^4 - 2p^3(^4S^\circ)4s$	$^3P-^3S^\circ$	109.905	874.6	910750	9	3	1.79E+10	1.08E-02
			110.104	2521.8	910750	1	3	1.98E+09	1.08E-02
			110.015	1783.1	910750	3	3	5.95E+09	1.08E-02
			109.800	0	910750	5	3	9.96E+09	1.08E-02
Mg V	$2s^2 2p^4 - 2p^3(^4S^\circ)4d^*$	$^3P-^3D^\circ$	104.0347	874.6	962092	9	15	5.77E+10	1.56E-01
			104.2109	2521.8	962114	1	3	3.19E+10	1.56E-01
			104.1320	1783.1	962103	3	5	4.32E+10	1.17E-01
			104.1308	1783.1	962114	3	3	2.39E+10	3.89E-02
			103.9420	0	962075	5	7	5.78E+10	1.31E-01
			103.9390	0	962103	5	5	1.44E+10	2.33E-02
			103.9378	0	962114	5	3	1.61E+09	1.56E-03
Mg V	$2s^2 2p^4 - 2p^3(^2D^\circ)4s^*$	$^3P-^3D^\circ$	103.9987	874.6	962425	9	15	5.77E+10	1.56E-01
			104.1791	2521.8	962407	1	3	3.20E+10	1.56E-01
			104.0990	1783.1	962407	3	5	4.32E+10	1.17E-01
			104.0990	1783.1	962407	3	3	2.39E+10	3.89E-02
			103.9061	0	962407	5	5	1.44E+10	2.33E-02
			103.9061	0	962407	5	3	1.61E+09	1.56E-03
			103.9020	0	962445	5	7	5.78E+10	1.31E-01
Mg V	$2s^2 2p^4 - 2p^3(^2P^\circ)4s$	$^3P-^3P^\circ$	101.04	874.6	990600	9	9	3.53E+09	5.40E-03
			101.21?	2521.8	990600?	1	3	1.17E+09	5.39E-03
			101.13?	1783.1	990600?	3	3	8.80E+08	1.35E-03
			101.13?	1783.1	990600?	3	5	8.77E+08	2.24E-03
			101.13?	1783.1	990600?	3	1	3.52E+09	1.80E-03
			100.95?	0	990600?	5	5	2.66E+09	4.06E-03
			100.95?	0	990600?	5	3	1.47E+09	1.35E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg V	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P - ^3D^\circ$	98.7165	874.6	1013877	9	15	1.60E+10	3.90E-02
			98.8720	2521.8	1013931	1	3	8.85E+09	3.89E-02
			98.8031	1783.1	1013897	3	5	1.20E+10	2.93E-02
			98.7998	1783.1	1013931	3	3	6.66E+09	9.74E-03
			98.6350	0	1013839	5	7	1.61E+10	3.28E-02
			98.6293	0	1013897	5	5	4.02E+09	5.86E-03
Mg V	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P - ^3P^\circ$	98.6260	0	1013931	5	3	4.46E+08	3.90E-04
			98.339	874.6	1017760	9	9	2.75E+10	3.99E-02
			98.476	2521.8	1018000	1	3	9.12E+09	3.98E-02
			98.441	1783.1	1017620	3	5	6.86E+09	1.66E-02
			98.404	1783.1	1018000	3	3	6.86E+09	9.96E-03
			98.269	0	1017620	5	5	2.07E+10	2.99E-02
Mg V	$2s^2 2p^4 - 2p^3(^4S^\circ)5d$	$^3P - ^3D^\circ$	98.232	0	1018000	5	3	1.15E+10	9.98E-03
				1783.1		3	1	2.75E+10	1.33E-02
			97.475	874.6	1026780	9	15	2.33E+10	5.52E-02
			97.632	2521.8	1026780	1	3	1.29E+10	5.51E-02
			97.561	1783.1	1026780	3	5	1.74E+10	4.14E-02
			97.561	1783.1	1026780	3	3	9.67E+09	1.38E-02
Mg V	$2s^2 2p^4 - 2p^3(^2P^\circ)4d$	$^3P - ^3P^\circ$	97.392	0	1026780	5	7	2.33E+10	4.64E-02
			97.392	0	1026780	5	5	5.83E+09	8.29E-03
			97.392	0	1026780	5	3	6.48E+08	5.53E-04
			95.984	874.6	1042710	9	9	1.76E+10	2.43E-02
			96.149	2521.8	1042570	1	3	5.84E+09	2.43E-02
			96.081	1783.1	1042570	3	3	4.39E+09	6.07E-03
Mg V	$2s^2 2p^4 - 2p^3(^2P^\circ)4d$	$^3P - ^3P^\circ$	96.060	1783.1	1042800	3	5	4.38E+09	1.01E-02
			95.917	0	1042570	5	3	7.36E+09	6.09E-03
			95.896	0	1042800	5	5	1.33E+10	1.83E-02
				1783.1		3	1	1.76E+10	8.11E-03
			95.879	874.6	1043860	9	15	3.27E+10	7.52E-02
			96.030	2521.8	1043860	1	3	1.81E+10	7.51E-02
Mg V	$2s^2 2p^4 - 2p^3(^2P^\circ)4d$	$^3P - ^3D^\circ$	95.962	1783.1	1043860	3	5	2.45E+10	5.64E-02
			95.962	1783.1	1043860	3	3	1.36E+10	1.88E-02
			95.798	0	1043860	5	7	3.29E+10	6.33E-02
			95.798	0	1043860	5	5	8.21E+09	1.13E-02
			95.798	0	1043860	5	3	9.12E+08	7.53E-04
Mg V	$2s^2 2p^4 - 2p^3(^2D^\circ)5d$	$^3P - ^3P^\circ$	92.506	874.6	1081880	9	9	3.01E+10	3.86E-02
			92.648	2521.8	1081880	1	3	1.00E+10	3.86E-02
			92.584	1783.1	1081880	3	3	7.50E+09	9.64E-03
			92.584	1783.1	1081880	3	5	7.52E+09	1.61E-02
			92.432	0	1081880	5	5	2.26E+10	2.90E-02
			92.432	0	1081880	5	3	1.26E+10	9.66E-03
Mg VI	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$		1783.1		3	1	3.02E+10	1.29E-02
			401.751	0	248910	4	12	2.80E+09	2.03E-01
			403.310	0	247948	4	6	2.76E+09	1.01E-01
			400.667	0	249584	4	4	2.82E+09	6.78E-02
			399.281	0	250450	4	2	2.85E+09	3.41E-02
Mg VI	$2s^2 2p^3 - 2p^2(^3P)3s$	$^4S^\circ - ^4P$	111.668	0	895510	4	12	2.21E+10	1.24E-01
			111.864	0	893940	4	2	2.22E+10	2.08E-02
			111.746	0	894890	4	4	2.22E+10	4.16E-02
			111.552	0	896440	4	6	2.23E+10	6.25E-02
Mg VI	$2s^2 2p^3 - 2p^2(^3P)3d$	$^4S^\circ - ^4P$	95.446	0	1047715	4	12	3.08E+11	1.26E+00
			95.483	0	1047310	4	6	3.07E+11	6.29E-01
			95.421	0	1047990	4	4	3.08E+11	4.21E-01
			95.385	0	1048380	4	2	3.08E+11	2.10E-01
Mg VI	$2s^2 2p^3 - 2p^2(^5S^\circ)3p$	$^4S^\circ - ^4P$	90.897	0	1100150	4	12	4.55E+10	1.69E-01
			90.897	0	1100150	4	6	4.53E+10	8.42E-02
			90.897	0	1100150	4	4	4.53E+10	5.61E-02
			90.897	0	1100150	4	2	4.52E+10	2.80E-02
Mg VI	$2s^2 2p^3 - 2p^2(^3P)4s$	$^4S^\circ - ^4P$	83.560	0	1196740	4	12	7.16E+09	2.25E-02
			83.5603?	0	1196740?	4	6	7.13E+09	1.12E-02
				0		4	4	7.15E+09	7.48E-03
				0		4	2	7.15E+09	3.74E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg VI	$2s^2 2p^3 - 2p^2(^3P)4d$	$^4S^\circ - ^4P$	79.8413	0	1252485	4	12	7.74E+10	2.22E-01
			79.8569	0	1252240	4	6	7.74E+10	1.11E-01
			79.8301	0	1252660	4	4	7.72E+10	7.38E-02
			79.8167	0	1252870	4	2	7.75E+10	3.70E-02
Mg VI	$2s^2 2p^3 - 2p^2(^3P)5s$	$^4S^\circ - ^4P$	75.856	0	1318280	4	12	1.01E+10	2.62E-02
			75.890?	0	1317700?	4	4	1.01E+10	8.74E-03
			75.834?	0	1318670?	4	6	1.01E+10	1.31E-02
				0		4	2	1.02E+10	4.38E-03
Mg VI	$2s^2 2p^3 - 2p^3(^5S^\circ)4p$	$^4S^\circ - ^4P$	74.5740	0	1340950	4	12	3.70E+09	9.25E-03
			74.5740?	0	1340950?	4	6	3.69E+09	4.62E-03
			74.5740?	0	1340950?	4	4	3.69E+09	3.08E-03
			74.5740?	0	1340950?	4	2	3.69E+09	1.54E-03
Mg VII	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3D^\circ$	433.035	1993	232922	9	15	1.69E+09	7.94E-02
			434.917	2924	232853	5	7	1.67E+09	6.64E-02
			434.720	2924	232957	5	5	4.20E+08	1.19E-02
			434.594	2924	233024	5	3	4.66E+07	7.91E-04
			431.313	1107	232957	3	5	1.28E+09	5.97E-02
			431.189	1107	233024	3	3	7.14E+08	1.99E-02
			429.140	0	233024	1	3	9.66E+08	8.00E-02
Mg VII	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3P^\circ$	366.417	1993	274906	9	9	4.54E+09	9.13E-02
			367.684	2924	274897	5	3	1.87E+09	2.27E-02
			367.674	2924	274904	5	5	3.37E+09	6.83E-02
			365.243	1107	274897	3	3	1.14E+09	2.29E-02
			365.234	1107	274904	3	5	1.15E+09	3.82E-02
			365.177	1107	274947	3	1	4.58E+09	3.05E-02
			363.773	0	274897	1	3	1.55E+09	9.20E-02
Mg VII	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3S^\circ$	277.682	1993	362117	9	3	2.91E+10	1.12E-01
			278.402	2924	362117	5	3	1.59E+10	1.11E-01
			277.001	1107	362117	3	3	9.74E+09	1.12E-01
			276.154	0	362117	1	3	3.27E+09	1.12E-01
Mg VII	$2s^2 2p^2 - 2s^2 2p3s$	$^3P - ^3P^\circ$	95.447	1993	1049700	9	9	5.15E+10	7.04E-02
			95.650	2924	1048400	5	3	2.14E+10	1.76E-02
			95.556	1107	1047610	3	1	5.15E+10	2.35E-02
			95.484	1107	1048400	3	3	1.29E+10	1.76E-02
			95.423	2924	1050890	5	5	3.87E+10	5.28E-02
			95.383	0	1048400	1	3	1.72E+10	7.04E-02
			95.258	1107	1050890	3	5	1.30E+10	2.95E-02
Mg VII	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3D^\circ$	83.9981	1993	1192500	9	15	4.41E+11	7.77E-01
			84.1166	2924	1191750	5	3	1.22E+10	7.76E-03
			84.0869	2924	1192170	5	5	1.09E+11	1.16E-01
			84.0247	2924	1193050	5	7	4.40E+11	6.52E-01
			83.9882	1107	1191750	3	3	1.83E+11	1.94E-01
			83.9586	1107	1192170	3	5	3.30E+11	5.82E-01
			83.9102	0	1191750	1	3	2.46E+11	7.78E-01
Mg VII	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3P^\circ$	83.6742	1993	1197110	9	9	2.47E+11	2.59E-01
			83.7643	2924	1196750	5	5	1.84E+11	1.94E-01
			83.7152	2924	1197450	5	3	1.03E+11	6.47E-02
			83.6370	1107	1196750	3	5	6.18E+10	1.08E-01
			83.5881	1107	1197450	3	3	6.19E+10	6.48E-02
			83.5601	1107	1197850	3	1	2.48E+11	8.65E-02
			83.5108	0	1197450	1	3	8.29E+10	2.60E-01
Mg VII	$2s^2 2p^2 - 2s2p^2(^4P)3p$	$^3P - ^3S^\circ$	81.0822	1993	1235310	9	3	1.03E+11	3.37E-02
			81.1434	2924	1235310	5	3	5.69E+10	3.37E-02
			81.0239	1107	1235310	3	3	3.43E+10	3.38E-02
			80.9513	0	1235310	1	3	1.15E+10	3.38E-02
Mg VII	$2s^2 2p^2 - 2s2p^2(^4P)3p$	$^3P - ^3D^\circ$	79.1424	1993	1265540	9	15	8.50E+10	1.33E-01
			79.2465	2924	1264810	5	5	2.11E+10	1.99E-02
			79.1680?	2924	1266060?	5	7	8.44E+10	1.11E-01
			79.1325	1107	1264810	3	5	6.37E+10	9.96E-02
				0		1	3	4.69E+10	1.32E-01
				1107		3	3	3.52E+10	3.31E-02
				2924		5	3	2.34E+09	1.32E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg VII	$2s^2 2p^2 - 2s 2p^2(^4P)3p$	$^3P - ^3P^o$	78.462	1993	1276500	9	9	8.07E+10	7.45E-02
			78.519	2924	1276500	5	5	6.05E+10	5.59E-02
			78.519	2924	1276500	5	3	3.37E+10	1.87E-02
			78.407	1107	1276500	3	3	2.03E+10	1.87E-02
			78.407	1107	1276500	3	5	2.02E+10	3.10E-02
			78.407	1107	1276500	3	1	8.07E+10	2.48E-02
			78.339	0	1276500	1	3	2.70E+10	7.46E-02
Mg VII	$2s^2 2p^2 - 2s 2p^2(^2D)3p$	$^3P - ^3D^o$	77.0869	1993	1299230	9	15	5.68E+09	8.43E-03
			77.1423	2924	1299230	5	7	5.66E+09	7.07E-03
			77.1423	2924	1299230	5	5	1.41E+09	1.26E-03
			77.1423	2924	1299230	5	3	1.57E+08	8.42E-05
			77.0343	1107	1299230	3	5	4.26E+09	6.32E-03
			77.0343	1107	1299230	3	3	2.37E+09	2.11E-03
			76.9687	0	1299230	1	3	3.17E+09	8.44E-03
Mg VII	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3D^o$	68.1174	1993	1470050	9	15	1.50E+11	1.74E-01
			68.1842?	2924	1469540?	5	5	3.76E+10	2.62E-02
			68.1438?	2924	1470410?	5	7	1.51E+11	1.47E-01
			68.0998?	1107	1469540?	3	5	1.13E+11	1.31E-01
				0		1	3	8.34E+10	1.74E-01
				1107		3	3	6.27E+10	4.36E-02
				2924		5	3	4.17E+09	1.74E-03
Mg VII	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3P^o$	68.0209	1993	1472130	9	9	8.53E+10	5.92E-02
			68.0640?	2924	1472130?	5	5	6.38E+10	4.43E-02
			67.9799?	1107	1472130?	3	5	2.14E+10	2.47E-02
				1107		3	3	2.13E+10	1.48E-02
				2924		5	3	3.56E+10	1.48E-02
				1107		3	1	8.52E+10	1.97E-02
				0		1	3	2.84E+10	5.91E-02
Mg VII	$2s^2 2p^2 - 2s 2p^2(^4P)4p$	$^3P - ^3D^o$	63.3586	1993	1580310	9	15	4.88E+10	4.89E-02
			63.3960?	2924	1580310?	5	7	4.87E+10	4.11E-02
				1107		3	5	3.64E+10	3.65E-02
				0		1	3	2.70E+10	4.87E-02
				2924		5	5	1.21E+10	7.30E-03
				1107		3	3	2.03E+10	1.22E-02
				2924		5	3	1.35E+09	4.87E-04
Mg VII	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3P^o$	62.6595	1993	1597920	9	9	3.35E+10	1.97E-02
			62.6961?	2924	1597920?	5	5	2.51E+10	1.48E-02
			62.6247?	1107	1597920?	3	5	8.39E+09	8.22E-03
				1107		3	3	8.36E+09	4.92E-03
				2924		5	3	1.39E+10	4.92E-03
				1107		3	1	3.34E+10	6.55E-03
				0		1	3	1.12E+10	1.97E-02
Mg VII	$2s^2 2p^2 - 2s^2 2p6d$	$^3P - ^3P^o$	60.1042	1993	1665770	9	9	2.51E+10	1.36E-02
			60.1379?	2924	1665770?	5	5	1.88E+10	1.02E-02
			60.1379?	2924	1665770?	5	3	1.04E+10	3.39E-03
			60.0722?	1107	1665770?	3	3	6.28E+09	3.40E-03
			60.0722?	1107	1665770?	3	5	6.28E+09	5.66E-03
			60.0722?	1107	1665770?	3	1	2.51E+10	4.53E-03
			60.0323?	0	1665770?	1	3	8.39E+09	1.36E-02
Mg VII	$2s^2 2p^2 - 2s 2p^2(^4P)5p$	$^3P - ^3D^o$	58.2843	1993	1717720	9	15	2.25E+10	1.91E-02
			58.3160?	2924	1717720?	5	7	2.26E+10	1.61E-02
				1107		3	5	1.68E+10	1.43E-02
				0		1	3	1.24E+10	1.90E-02
				2924		5	5	5.60E+09	2.85E-03
				1107		3	3	9.33E+09	4.75E-03
				2924		5	3	6.22E+08	1.90E-04
Mg VIII	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2D$	434.620	2201	232287	6	10	1.60E+09	7.56E-02
			436.735	3302	232274	4	6	1.58E+09	6.77E-02
			436.672	3302	232307	4	4	2.63E+08	7.52E-03
			430.465	0	232307	2	4	1.37E+09	7.63E-02
Mg VIII	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2S$	337.746	2201	298282	6	2	7.14E+09	4.07E-02
			339.006	3302	298282	4	2	4.70E+09	4.05E-02
			335.253	0	298282	2	2	2.43E+09	4.10E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg VIII	$2s^2 2p-2s^2 p^2$	$^2P^\circ-^2P$	314.609	2201	320056	6	6	1.37E+10	2.03E-01
			317.039	3302	318721	4	2	4.47E+09	3.37E-02
			315.039	3302	320723	4	4	1.14E+10	1.69E-01
			313.754	0	318721	2	2	9.28E+09	1.37E-01
			311.796	0	320723	2	4	2.35E+09	6.86E-02
Mg VIII	$2s^2 2p-2s^2 3s$	$^2P^\circ-^2S$	82.7480	2201	1210690	6	2	7.60E+10	2.60E-02
			82.8234	3302	1210690	4	2	5.06E+10	2.60E-02
			82.5975	0	1210690	2	2	2.55E+10	2.61E-02
Mg VIII	$2s^2 2p-2s^2 3d$	$^2P^\circ-^2D$	74.9760	2201	1335960	6	10	4.31E+11	6.06E-01
			75.0436	3302	1335860	4	4	7.18E+10	6.06E-02
			75.0341	3302	1336030	4	6	4.31E+11	5.46E-01
			74.8581	0	1335860	2	4	3.61E+11	6.07E-01
Mg VIII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2P$	71.0805	2201	1409060	6	6	1.58E+11	1.20E-01
			71.1709	3302	1408370	4	2	5.27E+10	2.00E-02
			71.1188	3302	1409400	4	4	1.32E+11	1.00E-01
			71.0041	0	1408370	2	2	1.06E+11	8.04E-02
			70.9522	0	1409400	2	4	2.67E+10	4.03E-02
Mg VIII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2D$	69.4570	2201	1441940	6	10	1.71E+11	2.06E-01
			69.5745	3302	1440610	4	4	2.82E+10	2.05E-02
			69.4672	3302	1442830	4	6	1.71E+11	1.86E-01
			69.4150	0	1440610	2	4	1.43E+11	2.06E-01
Mg VIII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2S$	68.5538	2201	1460910	6	2	1.70E+11	3.99E-02
			68.6056	3302	1460910	4	2	1.13E+11	3.98E-02
			68.4505	0	1460910	2	2	5.68E+10	3.99E-02
Mg VIII	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2D$	64.6559	2201	1548850	6	10	1.79E+10	1.87E-02
			64.7020	3302	1548850	4	6	1.78E+10	1.68E-02
				0		2	4	1.49E+10	1.87E-02
				3302		4	4	2.98E+09	1.87E-03
Mg VIII	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2P$	64.5924	2201	1550370	6	6	5.64E+10	3.53E-02
			64.6543	3302	1549990	4	2	1.87E+10	5.87E-03
			64.6305	3302	1550560	4	4	4.68E+10	2.93E-02
			64.5165	0	1549990	2	2	3.77E+10	2.35E-02
			64.4928	0	1550560	2	4	9.38E+09	1.17E-02
Mg VIII	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2S$	64.3340	2201	1556590	6	2	4.77E+10	9.87E-03
			64.3796	3302	1556590	4	2	3.17E+10	9.86E-03
			64.2430	0	1556590	2	2	1.60E+10	9.89E-03
Mg VIII	$2s^2 2p-2p^2(^1D)3s$	$^2P^\circ-^2D$	61.1027	2201	1638790	6	10	8.35E+08	7.79E-04
			61.1438	3302	1638790	4	6	8.33E+08	7.00E-04
			61.1438	3302	1638790	4	4	1.39E+08	7.79E-05
			61.0206	0	1638790	2	4	6.99E+08	7.80E-04
Mg VIII	$2s^2 2p-2s^2 4s$	$^2P^\circ-^2S$	60.7652	2201	1647880	6	2	1.64E+10	3.02E-03
			60.8059	3302	1647880	4	2	1.09E+10	3.02E-03
			60.6840	0	1647880	2	2	5.49E+09	3.03E-03
Mg VIII	$2s^2 2p-2s^2 4d$	$^2P^\circ-^2D$	59.1146	2201	1693830	6	10	1.42E+11	1.24E-01
			59.1531	3302	1693830	4	6	1.42E+11	1.12E-01
			59.1531	3302	1693830	4	4	2.36E+10	1.24E-02
			59.0378	0	1693830	2	4	1.19E+11	1.24E-01
Mg VIII	$2s^2 2p-2p^2(^3P)3d$	$^2P^\circ-^2D$	58.7862	2201	1703280	6	10	1.42E+10	1.23E-02
			58.8243?	3302	1703280?	4	6	1.41E+10	1.10E-02
				0		2	4	1.21E+10	1.25E-02
				3302		4	4	2.41E+09	1.25E-03
Mg VIII	$2s^2 2p-2p^2(^1D)3d$	$^2P^\circ-^2D$	57.747	2201	1733900	6	10	6.70E+09	5.58E-03
			57.783?	3302	1733900?	4	6	6.70E+09	5.03E-03
				0		2	4	5.63E+09	5.63E-03
				3302		4	4	1.13E+09	5.63E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg VIII	$2s^2 2p-2p^2(^1D)3d$	$^2P^o-^2P$	57.0709	2201	1754410	6	6	9.99E+09	4.88E-03
			57.1318?	3302	1753640?	4	2	3.32E+09	8.13E-04
			57.0943?	3302	1754790?	4	4	8.31E+09	4.06E-03
			57.0242?	0	1753640?	2	2	6.69E+09	3.26E-03
			56.9869?	0	1754790?	2	4	1.67E+09	1.63E-03
Mg VIII	$2s^2 2p-2s2p(^3P^o)4p$	$^2P^o-^2P$	55.1886	2201	1814170	6	6	7.14E+10	3.26E-02
			55.2221?	3302	1814170?	4	4	5.95E+10	2.72E-02
			55.1216?	0	1814170?	2	4	1.19E+10	1.08E-02
				0		2	2	4.75E+10	2.17E-02
				3302		4	2	2.37E+10	5.42E-03
Mg VIII	$2s^2 2p-2s2p(^3P^o)4p$	$^2P^o-^2D$	54.8795	2201	1824380	6	10	6.87E+10	5.17E-02
			54.9527?	3302	1823050?	4	4	1.14E+10	5.16E-03
			54.8860?	3302	1825260?	4	6	6.85E+10	4.64E-02
			54.8531?	0	1823050?	2	4	5.73E+10	5.17E-02
Mg VIII	$2s^2 2p-2s^2 5d$	$^2P^o-^2D$	53.8741	2201	1858380	6	10	6.45E+10	4.68E-02
			53.9078	3302	1858320	4	4	1.07E+10	4.68E-03
			53.9049	3302	1858420	4	6	6.44E+10	4.21E-02
			53.8120	0	1858320	2	4	5.39E+10	4.68E-02
Mg VIII	$2s^2 2p-2s^2 6d$	$^2P^o-^2D$	51.4441	2201	1946060	6	10	2.42E+10	1.60E-02
			51.4732	3302	1946060	4	6	2.42E+10	1.44E-02
			51.4732	3302	1946060	4	4	4.05E+09	1.61E-03
			51.3859	0	1946060	2	4	2.02E+10	1.60E-02
Mg VIII	$2s^2 2p-2s2p(^3P^o)5p$	$^2P^o-^2D$	50.1913	2201	1994580	6	10	3.80E+10	2.39E-02
			50.2190	3302	1994580	4	6	3.81E+10	2.16E-02
				0		2	4	3.15E+10	2.38E-02
				3302		4	4	6.30E+09	2.38E-03
Mg IX	$2s^2-2s2p$	$^1S-^1P^o$	368.071	0	271687	1	3	5.15E+09	3.14E-01
Mg IX	$2s^2-2s3p$	$^1S-^1P^o$	62.7510	0	1593600	1	3	3.07E+11	5.43E-01
Mg IX	$2s^2-2p3s$	$^1S-^1P^o$	57.3710	0	1743040	1	3	9.19E+09	1.36E-02
Mg IX	$2s^2-2p3d$	$^1S-^1P^o$	54.3018	0	1841560	1	3	2.58E+10	3.42E-02
Mg IX	$2s^2-2s4p$	$^1S-^1P^o$	48.3400	0	2068680	1	3	1.36E+11	1.43E-01
Mg IX	$2s^2-2p4d$	$^1S-^1P^o$	44.2809	0	2258310	1	3	2.60E+10	2.29E-02
Mg IX	$2s^2-2s5p$	$^1S-^1P^o$	43.8429	0	2280870	1	3	5.63E+10	4.87E-02
Mg IX	$2s^2-2s6p$	$^1S-^1P^o$	41.8030	0	2392170	1	3	4.22E+10	3.32E-02
Mg IX	$2s^2-2s7p$	$^1S-^1P^o$	40.6380	0	2460750	1	3	1.74E+10	1.29E-02
Mg X	$1s^2 2s-1s^2 2p$	$^2S-^2P^o$	614.760	0	162665	2	6	7.41E+08	1.26E-01
			624.941	0	160015	2	2	7.00E+08	4.10E-02
			609.793	0	163990	2	4	7.55E+08	8.42E-02
Mg X	$1s^2 2s-1s^2 3p$	$^2S-^2P^o$	57.8907	0	1727390	2	6	2.16E+11	3.26E-01
			57.9200	0	1726520	2	2	2.15E+11	1.08E-01
			57.8761	0	1727830	2	4	2.17E+11	2.18E-01
Mg X	$1s^2 2s-1s^2 4p$	$^2S-^2P^o$	44.0500	0	2270150	2	6	9.76E+10	8.52E-02
			44.0500	0	2270150	2	4	9.76E+10	5.68E-02
			44.0500	0	2270150	2	2	9.76E+10	2.84E-02
Mg X	$1s^2 2s-1s^2 5p$	$^2S-^2P^o$	39.668	0	2520900	2	6	5.10E+10	3.61E-02
			39.668	0	2520900	2	4	5.11E+10	2.41E-02
			39.668	0	2520900	2	2	5.09E+10	1.20E-02
Mg X	$1s^2 2s-1s^2 6p$	$^2S-^2P^o$	37.644	0	2656500	2	6	2.97E+10	1.89E-02
			37.644	0	2656500	2	4	2.97E+10	1.26E-02
			37.644	0	2656500	2	2	2.96E+10	6.29E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Mg X	$1s^2 2s-1s^2 7p$	$^2S-^2P^o$	36.518	0	2738400	2	6	1.87E+10	1.12E-02
			36.518	0	2738400	2	4	1.87E+10	7.48E-03
			36.518	0	2738400	2	2	1.87E+10	3.74E-03
Mg X	$1s^2 2s-1s^2 8p$	$^2S-^2P^o$	35.827	0	2791200	2	6	1.26E+10	7.26E-03
			35.827	0	2791200	2	4	1.26E+10	4.84E-03
			35.827	0	2791200	2	2	1.26E+10	2.42E-03
Mg X	$1s^2 2s-1s^2 9p$	$^2S-^2P^o$	35.366	0	2827600	2	6	8.82E+09	4.96E-03
			35.366	0	2827600	2	4	8.83E+09	3.31E-03
			35.366	0	2827600	2	2	8.80E+09	1.65E-03
Mg XI	$1s^2-1s2p$	$^1S-^1P^o$	9.1688	0	[10906612]	1	3	1.96E+13	7.42E-01
Mg XI	$1s^2-1s3p$	$^1S-^1P^o$	7.8505	0	[12738006]	1	3	5.45E+12	1.51E-01
Mg XI	$1s^2-1s4p$	$^1S-^1P^o$	7.4731	0	[13381265]	1	3	2.25E+12	5.65E-02
Mg XI	$1s^2-1s5p$	$^1S-^1P^o$	7.3103	0	[13679363]	1	3	1.14E+12	2.73E-02
Mg XI	$1s^2-1s6p$	$^1S-^1P^o$	7.2247	0	[13841392]	1	3	6.52E+11	1.53E-02
Mg XI	$1s^2-1s7p$	$^1S-^1P^o$	7.1741	0	[13939122]	1	3	4.11E+11	9.52E-03
Mg XI	$1s^2-1s8p$	$^1S-^1P^o$	7.1415	0	[14002566]	1	3	2.75E+11	6.31E-03
Mg XI	$1s^2-1s9p$	$^1S-^1P^o$	7.1194	0	[14046070]	1	3	1.93E+11	4.40E-03
Mg XI	$1s^2-1s10p$	$^1S-^1P^o$	7.1037	0	[14077192]	1	3	1.41E+11	3.19E-03
Mg XII	$1s-2p$	$^2S-^2P^o$	8.4210	0	11875057	2	6	1.30E+13	4.16E-01
			8.4246	0	[11869972]	2	2	1.31E+13	1.39E-01
			8.4192	0	[11877599]	2	4	1.30E+13	2.77E-01
Mg XII	$1s-3p$	$^2S-^2P^o$	7.1062	0	14072308	2	6	3.48E+12	7.90E-02
			7.1069	0	[14070801]	2	2	3.47E+12	2.63E-02
			7.1058	0	[14073061]	2	4	3.48E+12	5.27E-02
Mg XII	$1s-4p$	$^2S-^2P^o$	6.7379	0	14841416	2	6	1.42E+12	2.90E-02
			6.7382	0	[14840780]	2	2	1.42E+12	9.67E-03
			6.7378	0	[14841734]	2	4	1.42E+12	1.93E-02
Mg XII	$1s-5p$	$^2S-^2P^o$	6.5801	0	15197364	2	6	7.14E+11	1.39E-02
			6.5802	0	[15197039]	2	2	7.16E+11	4.65E-03
			6.5800	0	[15197527]	2	4	7.16E+11	9.30E-03
Mg XII	$1s-6p$	$^2S-^2P^o$	6.4974	0	15390694	2	6	4.11E+11	7.80E-03
			6.4975	0	[15390506]	2	2	4.11E+11	2.60E-03
			6.4974	0	[15390789]	2	4	4.11E+11	5.20E-03
Mg XII	$1s-7p$	$^2S-^2P^o$	6.4486	0	15507254	2	6	2.58E+11	4.82E-03
			6.4486	0	[15507313]	2	4	2.57E+11	3.21E-03
			6.4486	0	[15507136]	2	2	2.57E+11	1.60E-03
Mg XII	$1s-8p$	$^2S-^2P^o$	6.4173	0	15582899	2	6	1.72E+11	3.19E-03
			6.4173	0	[15582939]	2	4	1.72E+11	2.12E-03
			6.4173	0	[15582820]	2	2	1.72E+11	1.06E-03
Mg XII	$1s-9p$	$^2S-^2P^o$	6.3960	0	15634757	2	6	1.21E+11	2.22E-03
			6.3960	0	[15634785]	2	4	1.21E+11	1.48E-03
			6.3960	0	[15634701]	2	2	1.20E+11	7.38E-04
Mg XII	$1s-10p$	$^2S-^2P^o$	6.3809	0	15671848	2	6	8.74E+10	1.60E-03
			6.3809	0	[15671868]	2	4	8.76E+10	1.07E-03
			6.3809	0	[15671807]	2	2	8.76E+10	5.35E-04
Al I	$3s^2 3p-3s^2 4s$	$^2P^o-^2S$	3956.7842	74.707	25347.756	6	2	1.56E+08	1.22E-01
			3962.6410	112.061	25347.756	4	2	1.04E+08	1.23E-01
			3945.1224	0	25347.756	2	2	5.27E+07	1.23E-01



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al I	$3s^23p-3s^23d$	$^2P^\circ-^2D$	3090.0867	74.707	32436.259	6	10	6.75E+07	1.61E-01
			3093.7347	112.061	32435.453	4	4	1.12E+07	1.61E-02
			3093.6062	112.061	32436.796	4	6	6.74E+07	1.45E-01
			3083.0462	0	32435.453	2	4	5.68E+07	1.62E-01
Al I	$3s^23p-3s^25s$	$^2P^\circ-^2S$	2658.5351	74.707	37689.407	6	2	4.13E+07	1.46E-02
			2661.1778	112.061	37689.407	4	2	2.75E+07	1.46E-02
			2653.2654	0	37689.407	2	2	1.39E+07	1.47E-02
Al I	$3s^23p-3s^26s$	$^2P^\circ-^2S$	2377.0075	74.707	42144.411	6	2	1.72E+07	4.85E-03
			2379.1199	112.061	42144.411	4	2	1.14E+07	4.84E-03
			2372.7939	0	42144.411	2	2	5.76E+06	4.86E-03
Al I	$3s^23p-3s^24d$	$^2P^\circ-^2D$	2371.8344	74.707	42236.167	6	10	4.60E+07	6.47E-02
			2374.0743	112.061	42233.742	4	4	7.64E+06	6.46E-03
			2373.8466	112.061	42237.783	4	6	4.59E+07	5.82E-02
			2367.7750	0	42233.742	2	4	3.85E+07	6.48E-02
Al I	$3s^23p-3s^25d$	$^2P^\circ-^2D$	2267.9255	74.707	44167.867	6	10	1.03E+08	1.33E-01
			2269.9241	112.061	44166.398	4	4	1.73E+07	1.34E-02
			2269.7979	112.061	44168.847	4	6	1.04E+08	1.20E-01
			2264.1647	0	44166.398	2	4	8.65E+07	1.33E-01
Al I	$3s^23p-3s^27s$	$^2P^\circ-^2S$	2262.5240	74.707	44273.133	6	2	9.07E+06	2.32E-03
			2264.4378	112.061	44273.133	4	2	6.04E+06	2.32E-03
			2258.7062	0	44273.133	2	2	3.05E+06	2.33E-03
Al I	$3s^23p-3s^26d$	$^2P^\circ-^2D$	2208.9530	74.707	45345.022	6	10	8.20E+07	1.00E-01
			2210.8191	112.061	45344.165	4	4	1.36E+07	1.00E-02
			2210.7493	112.061	45345.594	4	6	8.20E+07	9.01E-02
			2205.3554	0	45344.165	2	4	6.86E+07	1.00E-01
Al I	$3s^23p-3s^28s$	$^2P^\circ-^2S$	2203.4908	74.707	45457.244	6	2	5.36E+06	1.30E-03
			2205.3059	112.061	45457.244	4	2	3.57E+06	1.30E-03
			2199.8694	0	45457.244	2	2	1.79E+06	1.30E-03
Al I	$3s^23p-3s^27d$	$^2P^\circ-^2D$	2173.0037	74.707	46093.957	6	10	5.48E+07	6.46E-02
			2174.7942	112.061	46093.424	4	4	9.11E+06	6.46E-03
			2174.7522	112.061	46094.312	4	6	5.46E+07	5.81E-02
			2169.5069	0	46093.424	2	4	4.58E+07	6.47E-02
Al I	$3s^23p-3s^29s$	$^2P^\circ-^2S$	2168.7652	74.707	46183.895	6	2	3.40E+06	8.00E-04
			2170.5235	112.061	46183.895	4	2	2.27E+06	8.00E-04
			2165.2570	0	46183.895	2	2	1.14E+06	8.02E-04
Al I	$3s^23p-3s^28d$	$^2P^\circ-^2D$	2149.660	74.707	46593.70	6	10	3.65E+07	4.21E-02
			2151.405	112.061	46593.32	4	4	6.07E+06	4.21E-03
			2151.376	112.061	46593.95	4	6	3.64E+07	3.79E-02
			2146.230	0	46593.32	2	4	3.06E+07	4.22E-02
Al I	$3s^23p-3s^210s$	$^2P^\circ-^2S$	2146.511	74.707	46661.93	6	2	2.30E+06	5.30E-04
			2148.234	112.061	[46661.93]	4	2	1.53E+06	5.29E-04
			2143.075	0	[46661.93]	2	2	7.71E+05	5.31E-04
Al I	$3s^23p-3s^29d$	$^2P^\circ-^2D$	2133.715	74.707	46941.32	6	10	2.52E+07	2.87E-02
			2135.433	112.061	46940.97	4	4	4.18E+06	2.86E-03
			2135.407	112.061	46941.55	4	6	2.52E+07	2.58E-02
			2130.335	0	46940.97	2	4	2.11E+07	2.87E-02
Al I	$3s^23p-3s^211s$	$^2P^\circ-^2S$	2131.360	74.707	46993.11	6	2	1.62E+06	3.68E-04
			2133.058	112.061	[46993.11]	4	2	1.08E+06	3.68E-04
			2127.972	0	[46993.11]	2	2	5.44E+05	3.69E-04
Al I	$3s^23p-3s^210d$	$^2P^\circ-^2D$	2122.35	74.707	47192.3	6	10	1.79E+07	2.01E-02
			2124.03	112.061	47192.3	4	6	1.78E+07	1.81E-02
			2124.030	112.061	47192.38	4	4	2.97E+06	2.01E-03
			2118.986	0	47192.38	2	4	1.49E+07	2.01E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al I	$3s^2 3p-3s 3p^2$	$^2P^\circ-^2P$	1766.1316	74.707	56695.631	6	6	1.70E+09	7.96E-01
			1769.1327	112.061	56636.933	4	2	5.63E+08	1.32E-01
			1766.3813	112.061	56724.980	4	4	1.42E+09	6.63E-01
			1765.6323	0	56636.933	2	2	1.14E+09	5.31E-01
			1762.8918	0	56724.980	2	4	2.85E+08	2.66E-01
Al I	$3s^2 3p-3s 3p(^3P^\circ)4p$	$^2P^\circ-^2P$	1415.01	74.707	70745.5	6	6	3.96E+08	1.19E-01
			1416.48	112.061	70709.4	4	2	1.32E+08	1.99E-02
			1415.40	112.061	70763.5	4	4	3.31E+08	9.95E-02
			1414.24	0	70709.4	2	2	2.66E+08	7.97E-02
			1413.16	0	70763.5	2	4	6.65E+07	3.98E-02
Al I	$3s^2 3p-3s 3p(^3P^\circ)5p$	$^2P^\circ-^2P$	1288.03	74.707	77712.7	6	6	5.83E+07	1.45E-02
			1288.65	112.061	77712.7	4	4	4.86E+07	1.21E-02
			1286.79	0	77712.7	2	4	9.71E+06	4.82E-03
				0		2	2	3.85E+07	9.58E-03
				112.061		4	2	1.92E+07	2.39E-03
Al II	$3s^2-3s 3p$	$^1S-^1P^\circ$	1670.787	0	59852.02	1	3	1.44E+09	1.81E+00
Al II	$3s^2-3s 4p$	$^1S-^1P^\circ$	935.2738	0	106920.56	1	3	7.63E+06	3.00E-03
Al II	$3s^2-3s 5p$	$^1S-^1P^\circ$	794.4767	0	125869.015	1	3	1.99E+06	5.65E-04
Al II	$3s^2-3s 6p$	$^1S-^1P^\circ$	741.1833	0	134919.40	1	3	4.41E+06	1.09E-03
Al II	$3s^2-3s 7p$	$^1S-^1P^\circ$	714.6993	0	139918.98	1	3	4.79E+06	1.10E-03
Al II	$3s^2-3s 8p$	$^1S-^1P^\circ$	699.4905	0	142961.20	1	3	4.77E+06	1.05E-03
Al II	$3s^2-3s 9p$	$^1S-^1P^\circ$	689.9354	0	144941.10	1	3	4.65E+06	9.95E-04
Al II	$3s^2-3s 10p$	$^1S-^1P^\circ$	683.5274	0	146299.92	1	3	4.50E+06	9.45E-04
Al II	$3s^2-3s 11p$	$^1S-^1P^\circ$	679.0211	0	147270.82	1	3	4.13E+06	8.56E-04
Al III	$2p^6 3s-2p^6 3p$	$^2S-^2P^\circ$	1857.400	0	53838.71	2	6	5.55E+08	8.61E-01
			1862.790	0	53682.93	2	2	5.50E+08	2.86E-01
			1854.716	0	53916.60	2	4	5.57E+08	5.75E-01
Al III	$2p^6 3s-2p^6 4p$	$^2S-^2P^\circ$	695.9582	0	143686.79	2	6	6.33E+07	1.38E-02
			696.2170	0	143633.38	2	2	6.36E+07	4.62E-03
			695.8289	0	143713.50	2	4	6.38E+07	9.26E-03
Al III	$2p^6 3s-2p^6 5p$	$^2S-^2P^\circ$	560.3559	0	178458.02	2	6	5.69E+07	8.03E-03
			560.4331	0	178433.43	2	2	5.67E+07	2.67E-03
			560.3173	0	178470.32	2	4	5.68E+07	5.35E-03
Al III	$2p^6 3s-2p^6 6p$	$^2S-^2P^\circ$	511.1558	0	195635.07	2	6	3.78E+07	4.44E-03
			511.1907	0	195621.72	2	2	3.78E+07	1.48E-03
			511.1384	0	195641.74	2	4	3.78E+07	2.96E-03
Al III	$2p^6 3s-2p^6 7p$	$^2S-^2P^\circ$	486.8934	0	205383.76	2	6	2.49E+07	2.66E-03
			486.9124	0	205375.74	2	2	2.50E+07	8.90E-04
			486.8839	0	205387.77	2	4	2.50E+07	1.78E-03
Al IV	$2s^2 2p^6-2p^5 3s$	$^1S-^1P^\circ$	160.0724	0	624717.5	1	3	2.13E+10	2.45E-01
Al IV	$2s^2 2p^6-2p^5 3d$	$^1S-^1P^\circ$	129.7291	0	770836.9	1	3	1.03E+11	7.78E-01
Al V	$2s^2 2p^5-2s 2p^6$	$^2P^\circ-^2S$	279.588	1147	358816	6	2	2.14E+10	8.36E-02
			281.394	3442	358816	2	2	7.00E+09	8.31E-02
			278.694	0	358816	4	2	1.44E+10	8.39E-02
Al V	$2s^2 2p^5-2p^4(^3P)3s$	$^2P^\circ-^2P$	130.8986	1147	765097.7	6	6	4.63E+10	1.19E-01
			131.4391	3442	764250.4	2	4	7.61E+09	3.94E-02
			131.0015	3442	766792.2	2	2	3.07E+10	7.91E-02
			130.8472	0	764250.4	4	4	3.86E+10	9.90E-02
			130.4134	0	766792.2	4	2	1.56E+10	1.99E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al V	$2s^2 2p^5 - 2p^4(^1D)3s$	$^2P^o - ^2D$	125.7091	1147	796634.6	6	10	1.81E+10	7.13E-02
			126.0699	3442	796652.9	2	4	1.49E+10	7.11E-02
			125.5300	0	796622.4	4	6	1.81E+10	6.43E-02
			125.5252	0	796652.9	4	4	3.02E+09	7.14E-03
Al V	$2s^2 2p^5 - 2p^4(^1S)3s$	$^2P^o - ^2S$	118.657	1147	843914	6	2	1.89E+10	1.33E-02
			118.981	3442	843914	2	2	6.22E+09	1.32E-02
			118.495	0	843914	4	2	1.26E+10	1.33E-02
Al V	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2D$	108.1247	1147	926006	6	10	1.34E+11	3.92E-01
			108.4610	3442	925432	2	4	1.11E+11	3.91E-01
			108.0576	0	925432	4	4	2.24E+10	3.92E-02
			107.9461	0	926388	4	6	1.35E+11	3.53E-01
Al V	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2P$	107.9421	1147	927570	6	6	5.04E+10	8.80E-02
			108.4067	3442	925894	2	2	3.32E+10	5.85E-02
			108.1121	3442	928408	2	4	8.36E+09	2.93E-02
			108.0037	0	925894	4	2	1.68E+10	1.47E-02
			107.7113	0	928408	4	4	4.23E+10	7.35E-02
Al V	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2S$	104.2462	1147	960415	6	2	1.88E+11	1.02E-01
			104.4962	3442	960415	2	2	6.23E+10	1.02E-01
			104.1217	0	960415	4	2	1.26E+11	1.02E-01
Al V	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2P$	104.1691	1147	961125	6	6	1.52E+11	2.48E-01
			104.4467	3442	960868	2	4	2.53E+10	8.26E-02
			104.3628	3442	961638	2	2	1.02E+11	1.66E-01
			104.0726	0	960868	4	4	1.27E+11	2.07E-01
			103.9892	0	961638	4	2	5.12E+10	4.15E-02
Al V	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2D$	103.9762	1147	962906	6	10	8.77E+10	2.37E-01
			104.1800	3442	963319	2	4	7.28E+10	2.37E-01
			103.8820	0	962631	4	6	8.78E+10	2.13E-01
			103.8078	0	963319	4	4	1.47E+10	2.37E-02
Al V	$2s^2 2p^5 - 2p^4(^3P)4s$	$^2P^o - ^2P$	99.4625	1147	1006551	6	6	1.55E+10	2.30E-02
			99.7658	3442	1005790	2	4	2.56E+09	7.65E-03
			99.5390	3442	1008073	2	2	1.03E+10	1.53E-02
			99.4243	0	1005790	4	4	1.30E+10	1.92E-02
			99.1992	0	1008073	4	2	5.21E+09	3.84E-03
Al V	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^o - ^2D$	99.3980	1147	1007204	6	10	2.52E+10	6.23E-02
			99.6167	3442	1007290	2	4	2.09E+10	6.21E-02
			99.2905	0	1007146	4	6	2.53E+10	5.61E-02
			99.2763	0	1007290	4	4	4.22E+09	6.23E-03
Al V	$2s^2 2p^5 - 2p^4(^1D)4s$	$^2P^o - ^2D$	95.9376	1147	1043492	6	10	4.87E+09	1.12E-02
			96.1489	3442	1043495	2	4	4.04E+09	1.12E-02
			95.8323	0	1043490	4	6	4.89E+09	1.01E-02
			95.8318	0	1043495	4	4	8.13E+08	1.12E-03
Al V	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2D$	93.896	1147	1066150	6	10	8.62E+10	1.90E-01
			94.160	3442	1065460	2	4	7.15E+10	1.90E-01
			93.856	0	1065460	4	4	1.44E+10	1.90E-02
			93.755	0	1066610	4	6	8.65E+10	1.71E-01
Al V	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2P$	93.830	1147	1066900	6	6	4.45E+10	5.88E-02
			94.186	3442	1065170	2	2	2.93E+10	3.90E-02
			93.956	3442	1067770	2	4	7.40E+09	1.96E-02
			93.882	0	1065170	4	2	1.48E+10	9.79E-03
			93.653	0	1067770	4	4	3.73E+10	4.91E-02
Al V	$2s^2 2p^5 - 2p^4(^1S)4s$	$^2P^o - ^2S$	91.8434	1147	1089957	6	2	1.41E+10	5.95E-03
			92.0374	3442	1089957	2	2	4.68E+09	5.94E-03
			91.7467	0	1089957	4	2	9.45E+09	5.96E-03
Al V	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^o - ^2S$	90.794	1147	1102540	6	2	8.20E+10	3.38E-02
			90.984	3442	1102540	2	2	2.72E+10	3.37E-02
			90.700	0	1102540	4	2	5.48E+10	3.38E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al V	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^\circ - ^2P$	90.779	1147	1102720	6	6	4.58E+10	5.66E-02
			91.078	3442	1101400	2	2	3.02E+10	3.76E-02
			90.914	3442	1103380	2	4	7.59E+09	1.88E-02
			90.794	0	1101400	4	2	1.53E+10	9.43E-03
			90.631	0	1103380	4	4	3.83E+10	4.72E-02
Al V	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^\circ - ^2D$	90.741	1147	1103190	6	10	2.51E+10	5.17E-02
			90.646	0	1103190	4	6	2.52E+10	4.66E-02
				3442		2	4	2.09E+10	5.17E-02
				0		4	4	4.19E+09	5.17E-03
Al V	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^\circ - ^2D$	88.564	1147	1130280	6	10	5.10E+10	1.00E-01
			88.817	3442	1129350	2	4	4.22E+10	9.99E-02
			88.547	0	1129350	4	4	8.51E+09	1.00E-02
			88.425	0	1130900	4	6	5.15E+10	9.06E-02
Al V	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^\circ - ^2P$	88.456	1147	1131650	6	6	3.35E+10	3.93E-02
			88.636	3442	1131650	2	4	5.56E+09	1.31E-02
			88.367	0	1131650	4	4	2.79E+10	3.27E-02
				3442		2	2	2.22E+10	2.61E-02
				0		4	2	1.11E+10	6.53E-03
Al V	$2s^2 2p^5 - 2p^4(^1S)4d$	$^2P^\circ - ^2D$	87.1040	1147	1149200	6	10	1.69E+10	3.20E-02
			87.2739	3442	1149260	2	4	1.40E+10	3.20E-02
			87.0201	0	1149160	4	6	1.69E+10	2.88E-02
			87.0125	0	1149260	4	4	2.83E+09	3.21E-03
Al V	$2s^2 2p^5 - 2p^4(^3P)6d$	$^2P^\circ - ^2D$	85.9356	1147	1164810	6	10	5.47E+08	1.01E-03
			86.1766	3442	1163850	2	4	4.54E+08	1.01E-03
			85.9217	0	1163850	4	4	9.13E+07	1.01E-04
			85.8038	0	1165450	4	6	5.50E+08	9.11E-04
Al V	$2s^2 2p^5 - 2p^4(^1D)5d$	$^2P^\circ - ^2S$	85.7462	1147	1167380	6	2	6.07E+10	2.23E-02
			85.9152	3442	1167380	2	2	2.02E+10	2.23E-02
			85.6619	0	1167380	4	2	4.05E+10	2.23E-02
Al V	$2s^2 2p^5 - 2p^4(^1D)5d$	$^2P^\circ - ^2P$	85.6962	1147	1168060	6	6	2.38E+10	2.62E-02
			85.8651	3442	1168060	2	4	3.94E+09	8.71E-03
			85.6120	0	1168060	4	4	1.98E+10	2.18E-02
				3442		2	2	1.58E+10	1.74E-02
				0		4	2	7.92E+09	4.36E-03
Al VI	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	309.682	1336	324248	9	9	1.04E+10	1.49E-01
			312.237	2732	323002	3	5	2.53E+09	6.17E-02
			310.907	3829	325469	1	3	3.43E+09	1.49E-01
			309.850	2732	325469	3	3	2.59E+09	3.73E-02
			309.596	0	323002	5	5	7.79E+09	1.12E-01
			308.563	2732	326815	3	1	1.05E+10	4.99E-02
			307.249	0	325469	5	3	4.43E+09	3.76E-02
Al VI	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	109.6761	1336	913112	9	3	8.15E+10	4.90E-02
			109.9768	3829	913112	1	3	8.99E+09	4.89E-02
			109.8442	2732	913112	3	3	2.70E+10	4.89E-02
			109.5156	0	913112	5	3	4.55E+10	4.91E-02
Al VI	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	104.19	1336	961100	9	15	2.64E+10	7.16E-02
			104.46	3829	961100	1	3	1.45E+10	7.14E-02
			104.34	2732	961100	3	5	1.97E+10	5.36E-02
			104.34	2732	961100	3	3	1.10E+10	1.79E-02
			104.05	0	961100	5	7	2.65E+10	6.02E-02
			104.05	0	961100	5	5	6.65E+09	1.08E-02
			104.05	0	961100	5	3	7.36E+08	7.17E-04
Al VI	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P - ^3P^\circ$	100.7625	1336	993769	9	9	2.67E+10	4.06E-02
			101.0274	3829	993659	1	3	8.82E+09	4.05E-02
			100.9247	2732	993570	3	1	2.65E+10	1.35E-02
			100.9156	2732	993659	3	3	6.62E+09	1.01E-02
			100.8937	2732	993874	3	5	6.64E+09	1.69E-02
			100.6381	0	993659	5	3	1.12E+10	1.02E-02
			100.6164	0	993874	5	5	2.01E+10	3.05E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al VI	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P - ^3D^\circ$	92.7482	1336	1079524	9	15	1.27E+11	2.72E-01
			92.9707	3829	1079437	1	3	6.97E+10	2.71E-01
			92.8760	2732	1079437	3	3	5.25E+10	6.79E-02
			92.8743	2732	1079456	3	5	9.42E+10	2.03E-01
			92.6409	0	1079437	5	3	3.52E+09	2.72E-03
			92.6393	0	1079456	5	5	3.17E+10	4.08E-02
			92.6260	0	1079610	5	7	1.27E+11	2.29E-01
Al VI	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3D^\circ$	88.265	1336	1134290	9	15	1.60E+11	3.11E-01
			88.462	3829	1134260	1	3	8.81E+10	3.10E-01
			88.376	2732	1134260	3	3	6.63E+10	7.76E-02
			88.369	2732	1134350	3	5	1.19E+11	2.33E-01
			88.163	0	1134260	5	7	1.60E+11	2.61E-01
			88.163	0	1134260	5	3	4.45E+09	3.11E-03
			88.156	0	1134350	5	5	4.01E+10	4.67E-02
Al VI	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3P^\circ$	87.7233	1336	1141280	9	9	2.93E+11	3.38E-01
			87.8819	3829	1141720	1	3	9.70E+10	3.37E-01
			87.8620	2732	1140880	3	5	7.31E+10	1.41E-01
			87.7972	2732	1141720	3	3	7.29E+10	8.42E-02
			87.7757	2732	1142000	3	1	2.93E+11	1.13E-01
			87.6516	0	1140880	5	5	2.20E+11	2.53E-01
			87.5871	0	1141720	5	3	1.23E+11	8.46E-02
Al VI	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3S^\circ$	87.4337	1336	1145060	9	3	2.98E+11	1.14E-01
			87.6247	3829	1145060	1	3	3.30E+10	1.14E-01
			87.5405	2732	1145060	3	3	9.92E+10	1.14E-01
			87.3317	0	1145060	5	3	1.66E+11	1.14E-01
Al VI	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3P^\circ$	85.9401	1336	1164940	9	9	4.61E+10	5.10E-02
			86.1489	3829	1164610	1	3	1.52E+10	5.09E-02
			86.0942	2732	1164250	3	1	4.59E+10	1.70E-02
			86.0676	2732	1164610	3	3	1.15E+10	1.28E-02
			86.0187	2732	1165270	3	5	1.15E+10	2.13E-02
			85.8657	0	1164610	5	3	1.93E+10	1.28E-02
			85.8170	0	1165270	5	5	3.47E+10	3.83E-02
Al VI	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3D^\circ$	85.6330	1336	1169110	9	15	1.36E+11	2.49E-01
			85.8059	3829	1169250	1	3	7.49E+10	2.48E-01
			85.7664	2732	1168690	3	5	1.01E+11	1.86E-01
			85.7252	2732	1169250	3	3	5.64E+10	6.21E-02
			85.5659	0	1168690	5	5	3.40E+10	3.73E-02
			85.5249	0	1169250	5	3	3.78E+09	2.49E-03
			85.5176	0	1169350	5	7	1.36E+11	2.09E-01
Al VI	$2s^2 2p^4 - 2p^3(^4S^\circ)4s$	$^3P - ^3S^\circ$	82.1717	1336	1218300	9	3	3.56E+10	1.20E-02
			82.3404	3829	1218300	1	3	3.94E+09	1.20E-02
			82.2661	2732	1218300	3	3	1.18E+10	1.20E-02
			82.0816	0	1218300	5	3	1.98E+10	1.20E-02
Al VI	$2s^2 2p^4 - 2p^3(^2D^\circ)4s$	$^3P - ^3D^\circ$	78.5414	1336	1274550	9	15	5.87E+10	9.05E-02
			78.6955	3829	1274550	1	3	3.24E+10	9.03E-02
			78.6276	2732	1274550	3	5	4.38E+10	6.77E-02
			78.6276	2732	1274550	3	3	2.44E+10	2.26E-02
			78.4591	0	1274550	5	7	5.89E+10	7.61E-02
			78.4591	0	1274550	5	5	1.47E+10	1.36E-02
			78.4591	0	1274550	5	3	1.64E+09	9.06E-04
Al VI	$2s^2 2p^4 - 2p^3(^4S^\circ)4d$	$^3P - ^3D^\circ$	78.0260	1336	1282960	9	15	2.42E+10	3.68E-02
			78.1781	3829	1282960	1	3	1.34E+10	3.67E-02
			78.1111	2732	1282960	3	5	1.81E+10	2.76E-02
			78.1111	2732	1282960	3	3	1.00E+10	9.17E-03
			77.9448	0	1282960	5	7	2.42E+10	3.09E-02
			77.9448	0	1282960	5	5	6.06E+09	5.52E-03
			77.9448	0	1282960	5	3	6.73E+08	3.68E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al VI	$2s^2 2p^4 - 2p^3(^2P^\circ)4s$	$^3P - ^3P^\circ$	76.4799	1336	1308870	9	9	1.51E+10	1.32E-02
			76.5616?	2732	1308870?	3	5	3.76E+09	5.50E-03
			76.4018?	0	1308870?	5	5	1.13E+10	9.92E-03
				2732		3	3	3.77E+09	3.31E-03
				0		5	3	6.29E+09	3.31E-03
				2732		3	1	1.51E+10	4.41E-03
				3829		1	3	5.02E+09	1.32E-02
Al VI	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P - ^3D^\circ$	74.7326	1336	1339440	9	15	4.39E+10	6.12E-02
			74.8721	3829	1339440	1	3	2.42E+10	6.11E-02
			74.8107	2732	1339440	3	5	3.28E+10	4.59E-02
			74.8107	2732	1339440	3	3	1.82E+10	1.53E-02
			74.6581	0	1339440	5	7	4.40E+10	5.15E-02
			74.6581	0	1339440	5	5	1.10E+10	9.19E-03
			74.6581	0	1339440	5	3	1.22E+09	6.13E-04
Al VI	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P - ^3P^\circ$	74.5165	1336	1343320	9	9	9.98E+10	8.31E-02
			74.5941	2732	1343320	3	5	2.49E+10	3.46E-02
			74.4424	0	1343320	5	5	7.51E+10	6.24E-02
				2732		3	3	2.50E+10	2.08E-02
				0		5	3	4.16E+10	2.08E-02
				2732		3	1	9.98E+10	2.77E-02
				3829		1	3	3.33E+10	8.31E-02
Al VII	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$	355.05	0	281650	4	12	3.33E+09	1.89E-01
			356.89	0	280200	4	6	3.28E+09	9.39E-02
			353.77	0	282670	4	4	3.36E+09	6.31E-02
			352.15	0	283970	4	2	3.41E+09	3.17E-02
Al VII	$2s^2 2p^3 - 2p^2(^3P)3s$	$^4S^\circ - ^4P$	86.9899	0	1149560	4	12	3.58E+10	1.22E-01
			87.1688	0	1147200	4	2	3.58E+10	2.04E-02
			87.0587	0	1148650	4	4	3.60E+10	4.09E-02
			86.8847	0	1150950	4	6	3.62E+10	6.14E-02
Al VII	$2s^2 2p^3 - 2p^2(^3P)3d$	$^4S^\circ - ^4P$	75.3302	0	1327490	4	12	5.64E+11	1.44E+00
			75.3636	0	1326900	4	6	5.63E+11	7.19E-01
			75.3074	0	1327890	4	4	5.65E+11	4.80E-01
			75.2757	0	1328450	4	2	5.65E+11	2.40E-01
Al VII	$2s^2 2p^3 - 2p^3(^5S^\circ)3p$	$^4S^\circ - ^4P$	72.2775	0	1383556	4	12	6.68E+10	1.57E-01
			72.2784	0	1383540	4	6	6.69E+10	7.86E-02
			72.2763	0	1383580	4	4	6.70E+10	5.25E-02
				0		4	2	6.66E+10	2.61E-02
Al VII	$2s^2 2p^3 - 2p^2(^3P)4s$	$^4S^\circ - ^4P$	64.809	0	1543000	4	12	1.73E+10	3.27E-02
			64.809?	0	1543000?	4	6	1.74E+10	1.64E-02
				0		4	4	1.73E+10	1.09E-02
				0		4	2	1.73E+10	5.46E-03
Al VII	$2s^2 2p^3 - 2p^2(^3P)5s$	$^4S^\circ - ^4P$	58.751	0	1702100	4	12	1.12E+10	1.74E-02
			58.751?	0	1702100?	4	6	1.12E+10	8.68E-03
				0		4	4	1.12E+10	5.79E-03
				0		4	2	1.12E+10	2.90E-03
Al VIII	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3D^\circ$	385.78	3030	262240	9	15	1.99E+09	7.40E-02
			387.96	4420	262180	5	7	1.96E+09	6.18E-02
			387.82	4420	262270	5	5	4.88E+08	1.10E-02
			387.73	4420	262330	5	3	5.45E+07	7.37E-04
			383.79	1710	262270	3	5	1.52E+09	5.58E-02
			383.70	1710	262330	3	3	8.43E+08	1.86E-02
			381.20	0	262330	1	3	1.15E+09	7.49E-02
Al VIII	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3P^\circ$	326.71	3030	309110	9	9	5.27E+09	8.43E-02
			328.20	4420	309110	5	5	3.90E+09	6.30E-02
			328.20	4420	309110	5	3	2.17E+09	2.10E-02
			325.31	1710	309110	3	3	1.34E+09	2.12E-02
			325.31	1710	309110	3	5	1.33E+09	3.53E-02
			325.31	1710	309110	3	1	5.33E+09	2.82E-02
			323.51	0	309110	1	3	1.81E+09	8.51E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al VIII	$2s^2 2p^2 - 2s 2p^3$	$^3P - ^3S^\circ$	249.27	3030	404200	9	3	3.28E+10	1.02E-01
			250.14	4420	404200	5	3	1.81E+10	1.02E-01
			248.45	1710	404200	3	3	1.10E+10	1.02E-01
			247.40	0	404200	1	3	3.74E+09	1.03E-01
Al VIII	$2s^2 2p^2 - 2s^2 2p 3s$	$^3P - ^3P^\circ$	75.7976	3030	1322330	9	9	7.91E+10	6.81E-02
			75.9867	4420	1320440	5	3	3.27E+10	1.70E-02
			75.8938?	1710	1319340?	3	1	7.89E+10	2.27E-02
			75.8305	1710	1320440	3	3	1.97E+10	1.70E-02
			75.7782	4420	1324060	5	5	5.94E+10	5.11E-02
			75.7323	0	1320440	1	3	2.64E+10	6.82E-02
			75.6229	1710	1324060	3	5	1.99E+10	2.85E-02
Al VIII	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3D^\circ$	67.4419	3030	1485780	9	15	7.14E+11	8.11E-01
			67.5607	4420	1484570	5	3	1.97E+10	8.10E-03
			67.5302	4420	1485240	5	5	1.78E+11	1.22E-01
			67.4641	4420	1486690	5	7	7.13E+11	6.81E-01
			67.4372	1710	1484570	3	3	2.98E+11	2.03E-01
			67.4068	1710	1485240	3	5	5.36E+11	6.09E-01
			67.3596	0	1484570	1	3	3.98E+11	8.12E-01
Al VIII	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3P^\circ$	67.2024	3030	1491070	9	9	3.99E+11	2.70E-01
			67.2880	4420	1490570	5	5	2.99E+11	2.03E-01
			67.2436	4420	1491550	5	3	1.66E+11	6.75E-02
			67.1655	1710	1490570	3	5	1.00E+11	1.13E-01
			67.1213	1710	1491550	3	3	1.00E+11	6.76E-02
			67.0961	1710	1492110	3	1	4.01E+11	9.02E-02
			67.0443	0	1491550	1	3	1.34E+11	2.71E-01
Al VIII	$2s^2 2p^2 - 2s 2p^2(^4P)3p$	$^3P - ^3S^\circ$	65.4354	3030	1531250	9	3	1.69E+11	3.61E-02
			65.4952	4420	1531250	5	3	9.33E+10	3.60E-02
			65.3791	1710	1531250	3	3	5.63E+10	3.61E-02
			65.3061	0	1531250	1	3	1.88E+10	3.61E-02
Al VIII	$2s^2 2p^2 - 2s 2p^2(^4P)3p$	$^3P - ^3D^\circ$	63.9945	3030	1565660	9	15	1.42E+11	1.45E-01
			64.1141?	4420	1564140?	5	3	3.89E+09	1.44E-03
			64.0808?	4420	1564950?	5	5	3.54E+10	2.18E-02
			64.0041?	4420	1566820?	5	7	1.42E+11	1.22E-01
			64.0029?	1710	1564140?	3	3	5.91E+10	3.63E-02
			63.9697?	1710	1564950?	3	5	1.07E+11	1.09E-01
			63.9329?	0	1564140?	1	3	7.89E+10	1.45E-01
Al VIII	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3D^\circ$	54.2330	3030	1846920	9	15	2.49E+11	1.83E-01
			54.2968?	4420	1846150?	5	5	6.22E+10	2.75E-02
			54.2579?	4420	1847470?	5	7	2.49E+11	1.54E-01
			54.2170?	1710	1846150?	3	5	1.88E+11	1.38E-01
				0		1	3	1.38E+11	1.83E-01
				1710		3	3	1.04E+11	4.58E-02
				4420		5	3	6.92E+09	1.83E-03
Al IX	$2s^2 2p - 2s 2p^2$	$^2P^\circ - ^2D$	389.89	3260	259742	6	10	1.84E+09	6.99E-02
			392.40	4890	259730	4	6	1.80E+09	6.25E-02
			392.36	4890	259760	4	4	3.01E+08	6.94E-03
			384.97	0	259760	2	4	1.59E+09	7.08E-02
Al IX	$2s^2 2p - 2s 2p^2$	$^2P^\circ - ^2S$	303.54	3260	332710	6	2	8.10E+09	3.73E-02
			305.05	4890	332710	4	2	5.33E+09	3.72E-02
			300.56	0	332710	2	2	2.78E+09	3.77E-02
Al IX	$2s^2 2p - 2s 2p^2$	$^2P^\circ - ^2P$	283.50	3260	355990	6	6	1.54E+10	1.86E-01
			286.38	4890	354080	4	2	4.99E+09	3.07E-02
			284.04	4890	356950	4	4	1.28E+10	1.55E-01
			282.42	0	354080	2	2	1.04E+10	1.24E-01
Al IX	$2s^2 2p - 2s^2 3s$	$^2P^\circ - ^2S$	280.15	0	356950	2	4	2.67E+09	6.28E-02
			66.7664	3260	1501020	6	2	1.12E+11	2.50E-02
			66.8391	4890	1501020	4	2	7.47E+10	2.50E-02
			66.6214	0	1501020	2	2	3.77E+10	2.51E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al IX	$2s^2 2p-2s^2 3d$	$^2P^\circ-^2D$	61.0119	3260	1642280	6	10	6.64E+11	6.18E-01
			61.0780	4890	1642140	4	4	1.10E+11	6.17E-02
			61.0691	4890	1642380	4	6	6.62E+11	5.55E-01
			60.8961	0	1642140	2	4	5.57E+11	6.19E-01
Al IX	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2P$	58.1861	3260	1721880	6	6	2.48E+11	1.26E-01
			58.2771	4890	1720830	4	2	8.25E+10	2.10E-02
			58.2235	4890	1722410	4	4	2.07E+11	1.05E-01
			58.1115	0	1720830	2	2	1.67E+11	8.45E-02
			58.0582	0	1722410	2	4	4.19E+10	4.23E-02
Al IX	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2D$	56.9372	3260	1759580	6	10	2.75E+11	2.23E-01
			57.0578	4890	1757500	4	4	4.55E+10	2.22E-02
			56.9450	4890	1760970	4	6	2.76E+11	2.01E-01
			56.8990	0	1757500	2	4	2.30E+11	2.23E-01
Al IX	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2S$	56.2525	3260	1780960	6	2	2.78E+11	4.39E-02
			56.3041	4890	1780960	4	2	1.85E+11	4.39E-02
			56.1495	0	1780960	2	2	9.31E+10	4.40E-02
Al IX	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2P$	53.3394	3260	1878050	6	6	8.93E+10	3.81E-02
			53.4060	4890	1877340	4	2	2.97E+10	6.34E-03
			53.3757	4890	1878400	4	4	7.45E+10	3.18E-02
			53.2669	0	1877340	2	2	5.97E+10	2.54E-02
			53.2368	0	1878400	2	4	1.51E+10	1.28E-02
Al IX	$2s^2 2p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2S$	53.055	3260	1888100	6	2	6.08E+10	8.55E-03
			53.101?	4890	1888100?	4	2	4.05E+10	8.55E-03
			52.963?	0	1888100?	2	2	2.04E+10	8.57E-03
Al IX	$2s^2 2p-2s^2 4d$	$^2P^\circ-^2D$	47.8230	3260	2094300	6	10	2.41E+11	1.38E-01
			47.8668	4890	2094020	4	4	4.02E+10	1.38E-02
			47.8560	4890	2094490	4	6	2.41E+11	1.24E-01
			47.7550	0	2094020	2	4	2.02E+11	1.38E-01
Al IX	$2s^2 2p-2s2p(^3P^\circ)4p$	$^2P^\circ-^2D$	44.7338	3260	2238700	6	10	1.16E+11	5.82E-02
			44.8019?	4890	2236940?	4	4	1.93E+10	5.81E-03
			44.7429?	4890	2239880?	4	6	1.16E+11	5.24E-02
			44.7039?	0	2236940?	2	4	9.71E+10	5.82E-02
Al IX	$2s^2 2p-2s^2 5d$	$^2P^\circ-^2D$	43.5182	3260	2301150	6	10	1.05E+11	4.96E-02
			43.5491	4890	2301150	4	6	1.05E+11	4.47E-02
				0		2	4	8.72E+10	4.95E-02
				4890		4	4	1.74E+10	4.95E-03
Al IX	$2s^2 2p-2s^2 6d$	$^2P^\circ-^2D$	41.5150	3260	2412030	6	10	5.39E+10	2.32E-02
			41.5431	4890	2412030	4	6	5.38E+10	2.09E-02
				0		2	4	4.49E+10	2.32E-02
				4890		4	4	8.98E+09	2.32E-03
Al X	$2s^2-2s2p$	$^1S-^1P^\circ$	332.79	0	300490	1	3	5.76E+09	2.87E-01
Al X	$2s^2-2s3p$	$^1S-^1P^\circ$	51.9791	0	1923850	1	3	4.65E+11	5.65E-01
Al X	$2s^2-2p3s$	$^1S-^1P^\circ$	47.8041?	0	2091870?	1	3	1.67E+10	1.72E-02
Al XI	$1s^2 2s-1s^2 2p$	$^2S-^2P^\circ$	555.931	0	179878	2	6	8.27E+08	1.15E-01
			568.120	0	176019	2	2	7.75E+08	3.75E-02
			550.031	0	181808	2	4	8.52E+08	7.73E-02
Al XI	$1s^2 2s-1s^2 3p$	$^2S-^2P^\circ$	48.3107	0	2069940	2	6	3.19E+11	3.35E-01
			48.3379	0	2068770	2	2	3.17E+11	1.11E-01
			48.2970	0	2070520	2	4	3.20E+11	2.24E-01
Al XI	$1s^2 2s-1s^2 4p$	$^2S-^2P^\circ$	36.6751	0	2726650	2	6	1.44E+11	8.72E-02
			36.6822	0	2726120	2	2	1.44E+11	2.91E-02
			36.6715	0	2726910	2	4	1.44E+11	5.82E-02
Al XI	$1s^2 2s-1s^2 5p$	$^2S-^2P^\circ$	33.007	0	3029700	2	6	7.47E+10	3.66E-02
			33.007	0	3029700	2	4	7.47E+10	2.44E-02
			33.007	0	3029700	2	2	7.47E+10	1.22E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Al XI	$1s^2 2s-1s^2 6p$	$^2S-^2P^o$	31.313	0	3193600	2	6	4.33E+10	1.91E-02
			31.313	0	3193600	2	4	4.32E+10	1.27E-02
			31.313	0	3193600	2	2	4.35E+10	6.39E-03
Al XI	$1s^2 2s-1s^2 7p$	$^2S-^2P^o$	30.376	0	3292100	2	6	2.75E+10	1.14E-02
			30.376	0	3292100	2	4	2.74E+10	7.59E-03
			30.376	0	3292100	2	2	2.74E+10	3.79E-03
Al XI	$1s^2 2s-1s^2 8p$	$^2S-^2P^o$	29.793	0	3356500	2	6	1.83E+10	7.32E-03
			29.793	0	3356500	2	4	1.83E+10	4.88E-03
			29.793	0	3356500	2	2	1.83E+10	2.44E-03
Al XI	$1s^2 2s-1s^2 9p$	$^2S-^2P^o$	29.416	0	3399500	2	6	1.29E+10	5.01E-03
			29.416	0	3399500	2	4	1.29E+10	3.34E-03
			29.416	0	3399500	2	2	1.29E+10	1.67E-03
Al XII	$1s^2-1s2p$	$^1S-^1P^o$	7.7573	0	[12891081]	1	3	2.77E+13	7.50E-01
Al XII	$1s^2-1s3p$	$^1S-^1P^o$	6.6348	0	[15072141]	1	3	7.68E+12	1.52E-01
Al XII	$1s^2-1s4p$	$^1S-^1P^o$	6.3139	0	[15838068]	1	3	3.16E+12	5.67E-02
Al XII	$1s^2-1s5p$	$^1S-^1P^o$	6.1755	0	[16192975]	1	3	1.60E+12	2.75E-02
Al XII	$1s^2-1s6p$	$^1S-^1P^o$	6.1028	0	[16385868]	1	3	9.19E+11	1.54E-02
Al XII	$1s^2-1s7p$	$^1S-^1P^o$	6.0598	0	[16502210]	1	3	5.77E+11	9.53E-03
Al XII	$1s^2-1s8p$	$^1S-^1P^o$	6.0322	0	[16577734]	1	3	3.86E+11	6.31E-03
Al XII	$1s^2-1s9p$	$^1S-^1P^o$	6.0134	0	[16629519]	1	3	2.71E+11	4.40E-03
Al XII	$1s^2-1s10p$	$^1S-^1P^o$	6.0000	0	[16666564]	1	3	1.98E+11	3.20E-03
Al XIII	$1s-2p$	$^2S-^2P^o$	7.1727	0	13941713	2	6	1.80E+13	4.16E-01
			7.1763	0	[13934704]	2	2	1.80E+13	1.39E-01
			7.1709	0	[13945218]	2	4	1.80E+13	2.77E-01
Al XIII	$1s-3p$	$^2S-^2P^o$	6.0529	0	16520960	2	6	4.79E+12	7.90E-02
			6.0537	0	[16518883]	2	2	4.79E+12	2.63E-02
			6.0525	0	[16521999]	2	4	4.80E+12	5.27E-02
Al XIII	$1s-4p$	$^2S-^2P^o$	5.7393	0	17423794	2	6	1.96E+12	2.90E-02
			5.7396	0	[17422918]	2	2	1.96E+12	9.67E-03
			5.7391	0	[17424232]	2	4	1.95E+12	1.93E-02
Al XIII	$1s-5p$	$^2S-^2P^o$	5.6049	0	17841623	2	6	9.84E+11	1.39E-02
			5.6050	0	[17841174]	2	2	9.87E+11	4.65E-03
			5.6048	0	[17841847]	2	4	9.87E+11	9.30E-03
Al XIII	$1s-6p$	$^2S-^2P^o$	5.5345	0	18068558	2	6	5.66E+11	7.80E-03
			5.5346	0	[18068299]	2	2	5.66E+11	2.60E-03
			5.5344	0	[18068688]	2	4	5.66E+11	5.20E-03
Al XIII	$1s-7p$	$^2S-^2P^o$	5.4929	0	18205376	2	6	3.55E+11	4.82E-03
			5.4929	0	[18205458]	2	4	3.55E+11	3.21E-03
			5.4929	0	[18205213]	2	2	3.54E+11	1.60E-03
Al XIII	$1s-8p$	$^2S-^2P^o$	5.4662	0	18294167	2	6	2.37E+11	3.19E-03
			5.4663	0	[18294057]	2	2	2.37E+11	1.06E-03
			5.4662	0	[18294221]	2	4	2.37E+11	2.12E-03
Al XIII	$1s-9p$	$^2S-^2P^o$	5.4481	0	18355036	2	6	1.66E+11	2.22E-03
			5.4481	0	[18355074]	2	4	1.66E+11	1.48E-03
			5.4481	0	[18354959]	2	2	1.66E+11	7.38E-04
Al XIII	$1s-10p$	$^2S-^2P^o$	5.4352	0	18398572	2	6	1.20E+11	1.60E-03
			5.4352	0	[18398600]	2	4	1.21E+11	1.07E-03
			5.4352	0	[18398516]	2	2	1.21E+11	5.35E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si I	$3s^2 3p^2 - 3s^2 3p4s$	$^3P - ^3P^o$	2518.2422	149.681	39859.920	9	9	2.48E+08	2.36E-01
			2529.2682	223.157	39760.285	5	3	1.02E+08	5.86E-02
			2524.8669	77.115	39683.163	3	1	2.46E+08	7.83E-02
			2519.9600	77.115	39760.285	3	3	6.18E+07	5.88E-02
			2516.8696	223.157	39955.053	5	5	1.86E+08	1.77E-01
			2515.0725	0	39760.285	1	3	8.29E+07	2.36E-01
Si I	$3s^2 3p^2 - 3s^2 3p3d$	$^3P - ^3D^o$	2507.6522	77.115	39955.053	3	5	6.27E+07	9.85E-02
			2214.6614	149.681	45303.310	9	15	4.24E+07	5.20E-02
			2219.6065	223.157	45276.188	5	3	1.17E+06	5.19E-04
			2218.7476	223.157	45293.629	5	5	1.06E+07	7.79E-03
			2217.3593	223.157	45321.848	5	7	4.22E+07	4.36E-02
			2212.4348	77.115	45276.188	3	3	1.77E+07	1.30E-02
Si I	$3s^2 3p^2 - 3s^2 3p3d$	$^3P - ^3P^o$	2211.5814	77.115	45293.629	3	5	3.19E+07	3.90E-02
			2208.6665	0	45276.188	1	3	2.38E+07	5.22E-02
			1984.7672	149.681	50533.425	9	9	9.09E+07	5.37E-02
			1988.9937	223.157	50499.838	5	5	6.78E+07	4.02E-02
			1986.3640	223.157	50566.397	5	3	3.78E+07	1.34E-02
			1983.2328	77.115	50499.838	3	5	2.28E+07	2.24E-02
Si I	$3s^2 3p^2 - 3s^2 3p3d$	$^3P - ^3D^o$	1980.6184	77.115	50566.397	3	3	2.28E+07	1.34E-02
			1979.205	77.115	50602.44	3	1	9.19E+07	1.80E-02
			1977.5979	0	50566.397	1	3	3.06E+07	5.39E-02
			1849.2513	149.681	54225.621	9	15	3.16E+08	2.70E-01
			1853.1522	223.157	54185.264	5	3	8.74E+06	2.70E-03
			1852.4716	223.157	54205.090	5	5	7.87E+07	4.05E-02
Si I	$3s^2 3p^2 - 3s^2 3p3d$	$^3P - ^3D^o$	1850.6720	223.157	54257.582	5	7	3.16E+08	2.27E-01
			1848.1505	77.115	54185.264	3	3	1.32E+08	6.76E-02
			1847.4735	77.115	54205.090	3	5	2.38E+08	2.03E-01
			1845.5202	0	54185.264	1	3	1.77E+08	2.71E-01
			1842.4484	149.681	54425.286	9	9	5.72E+07	2.91E-02
			1848.7480	223.157	54313.818	5	3	2.36E+07	7.25E-03
Si I	$3s^2 3p^2 - 3s^2 3p5s$	$^3P - ^3P^o$	1846.1116	77.115	54245.020	3	1	5.68E+07	9.67E-03
			1843.7699	77.115	54313.818	3	3	1.43E+07	7.27E-03
			1841.4489	223.157	54528.220	5	5	4.29E+07	2.18E-02
			1841.1521	0	54313.818	1	3	1.91E+07	2.91E-02
			1836.5100	77.115	54528.220	3	5	1.45E+07	1.22E-02
			1768.376	149.681	56698.74	9	9	2.58E+07	1.21E-02
Si I	$3s^2 3p^2 - 3s^2 3p4d$	$^3P - ^3P^o$	1770.9225	223.157	56690.903	5	5	1.93E+07	9.06E-03
			1770.629	223.157	56700.25	5	3	1.07E+07	3.02E-03
			1766.3542	77.115	56690.903	3	5	6.48E+06	5.05E-03
			1766.063	77.115	56700.25	3	3	6.48E+06	3.03E-03
			1765.030	77.115	56733.38	3	1	2.59E+07	4.04E-03
			1763.661	0	56700.25	1	3	8.65E+06	1.21E-02
Si I	$3s^2 3p^2 - 3s^2 3p4d$	$^3P - ^3D^o$	1697.003	149.681	59077.11	9	15	2.17E+08	1.56E-01
			1700.419	223.157	59032.19	5	5	5.35E+07	2.32E-02
			1699.7162	223.157	59056.508	5	3	5.96E+06	1.55E-03
			1697.941	223.157	59118.03	5	7	2.16E+08	1.31E-01
			1696.207	77.115	59032.19	3	5	1.63E+08	1.17E-01
			1695.5074	77.115	59056.508	3	3	9.00E+07	3.88E-02
Si I	$3s^2 3p^2 - 3s^2 3p6s$	$^3P - ^3P^o$	1693.2935	0	59056.508	1	3	1.21E+08	1.56E-01
			1687.8381	149.681	59397.070	9	9	2.67E+07	1.14E-02
			1693.4681	223.157	59273.575	5	3	1.10E+07	2.84E-03
			1690.789	77.115	59221.11	3	1	2.65E+07	3.79E-03
			1689.2902	77.115	59273.575	3	3	6.66E+06	2.85E-03
			1687.0924	0	59273.575	1	3	8.90E+06	1.14E-02
Si I	$3s^2 3p^2 - 3s^2 3p5d$	$^3P - ^3D^o$	1686.8185	223.157	59506.359	5	5	2.00E+07	8.55E-03
			1682.6733	77.115	59506.359	3	5	6.74E+06	4.77E-03
			1629.455	149.681	61519.89	9	15	1.28E+08	8.49E-02
			1633.328	223.157	61447.86	5	5	3.18E+07	1.27E-02
			1631.624	223.157	61511.77	5	3	3.54E+06	8.48E-04
			1629.9478	223.157	61574.814	5	7	1.28E+08	7.13E-02
Si I	$3s^2 3p^2 - 3s^2 3p5d$	$^3P - ^3D^o$	1629.441	77.115	61447.86	3	5	9.59E+07	6.36E-02
			1627.746	77.115	61511.77	3	3	5.36E+07	2.13E-02
			1625.705	0	61511.77	1	3	7.16E+07	8.51E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm $^{-1}$	$E_k$ , cm $^{-1}$	$g_i$	$g_k$	$A_{ki}$ , s $^{-1}$	$f_{ik}$
Si I	$3s^23p^2-3s^23p5d^*$	$^3P-^3P^o$	1624.270	149.681	61715.79	9	9	8.98E+07	3.55E-02
			1629.400	223.157	61595.43	5	3	3.70E+07	8.84E-03
			1627.050	77.115	61538.05	3	1	8.92E+07	1.18E-02
			1625.532	77.115	61595.43	3	3	2.24E+07	8.86E-03
			1623.497	0	61595.43	1	3	2.99E+07	3.55E-02
			1623.366	223.157	61823.55	5	5	6.73E+07	2.66E-02
			1619.527	77.115	61823.55	3	5	2.26E+07	1.48E-02
Si I	$3s^23p^2-3s^23p7s^*$	$^3P-^3P^o$	1619.779	149.681	61886.48	9	9	1.87E+07	7.35E-03
			1622.882	223.157	61841.94	5	5	1.39E+07	5.50E-03
			1620.405	223.157	61936.13	5	3	7.79E+06	1.84E-03
			1619.044	77.115	61841.94	3	5	4.69E+06	3.07E-03
			1616.579	77.115	61936.13	3	3	4.70E+06	1.84E-03
			1615.949	77.115	61960.26	3	1	1.88E+07	2.45E-03
			1614.566	0	61936.13	1	3	6.29E+06	7.37E-03
Si I	$3s^23p^2-3s^23p6d$	$^3P-^3D^o$	1594.116	149.681	62880.36	9	15	7.91E+07	5.02E-02
			1598.674	223.157	62774.99	5	5	1.96E+07	7.51E-03
			1594.950	77.115	62774.99	3	5	5.93E+07	3.77E-02
			1594.829	223.157	62925.80	5	3	2.19E+06	5.01E-04
			1594.566	223.157	62936.14	5	7	7.91E+07	4.22E-02
			1591.123	77.115	62925.80	3	3	3.32E+07	1.26E-02
			1589.173	0	62925.80	1	3	4.43E+07	5.03E-02
Si I	$3s^23p^2-3s^23p6d^*$	$^3P-^3P^o$	1591.888	149.681	62968.16	9	9	7.82E+07	2.97E-02
			1597.697	223.157	62813.26	5	3	3.23E+07	7.41E-03
			1594.145	77.115	62806.65	3	1	7.80E+07	9.91E-03
			1593.977	77.115	62813.26	3	3	1.95E+07	7.43E-03
			1592.021	0	62813.26	1	3	2.61E+07	2.97E-02
			1590.577	223.157	63093.41	5	5	5.88E+07	2.23E-02
			1586.891	77.115	63093.41	3	5	1.97E+07	1.24E-02
Si I	$3s^23p^2-3s^23p8s^*$	$^3P-^3P^o$	1589.627	149.681	63057.50	9	9	1.90E+07	7.18E-03
			1592.426	223.157	63020.42	5	5	1.42E+07	5.38E-03
			1590.477	223.157	63097.36	5	3	7.87E+06	1.79E-03
			1588.731	77.115	63020.42	3	5	4.74E+06	2.99E-03
			1586.792	77.115	63097.36	3	3	4.77E+06	1.80E-03
			1586.137	77.115	63123.36	3	1	1.91E+07	2.40E-03
			1584.852	0	63097.36	1	3	6.38E+06	7.21E-03
Si I	$3s^23p^2-3s^23p7d$	$^3P-^3D^o$	1573.639	149.681	63696.64	9	15	5.12E+07	3.17E-02
			1578.477	223.157	63575.35	5	5	1.27E+07	4.74E-03
			1574.847	77.115	63575.35	3	5	3.82E+07	2.37E-02
			1574.128	223.157	63750.39	5	3	1.42E+06	3.17E-04
			1573.884	223.157	63760.24	5	7	5.12E+07	2.66E-02
			1570.518	77.115	63750.39	3	3	2.15E+07	7.94E-03
			1568.618	0	63750.39	1	3	2.87E+07	3.18E-02
Si I	$3s^23p^2-3s^23p7d:$	$^3P-^3P^o$	1569.865	149.681	63849.44	9	9	5.01E+07	1.85E-02
			1571.796	223.157	63844.65	5	3	2.08E+07	4.62E-03
			1568.196	77.115	63844.65	3	3	1.26E+07	4.63E-03
			1567.725?	77.115	63863.80?	3	1	5.03E+07	6.18E-03
			1566.302	0	63844.65	1	3	1.68E+07	1.85E-02
				223.157		5	5	3.73E+07	1.38E-02
				77.115		3	5	1.24E+07	7.64E-03
Si I	$3s^23p^2-3s3p^3$	$^3P-^3S^o$	1257.64	149.681	79664.0	9	3	3.66E+09	2.89E-01
			1258.80	223.157	79664.0	5	3	2.03E+09	2.89E-01
			1256.49	77.115	79664.0	3	3	1.22E+09	2.89E-01
			1255.27	0	79664.0	1	3	4.08E+08	2.89E-01
Si II	$3s^23p-3s3p^2$	$^2P^o-^2D$	1813.981	191.49	55318.85	6	10	3.10E+06	2.55E-03
			1817.451	287.24	55309.35	4	4	5.15E+05	2.55E-04
			1816.928	287.24	55325.18	4	6	3.08E+06	2.29E-03
			1808.013	0	55309.35	2	4	2.61E+06	2.56E-03
Si II	$3s^23p-3s^24s$	$^2P^o-^2S$	1531.183	191.49	65500.47	6	2	1.12E+09	1.31E-01
			1533.431	287.24	65500.47	4	2	7.43E+08	1.31E-01
			1526.707	0	65500.47	2	2	3.78E+08	1.32E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si II	$3s^23p-3s3p^2$	$^2P^\circ-^2S$	1307.636	191.49	76665.35	6	2	1.02E+09	8.68E-02
			1309.276	287.24	76665.35	4	2	6.75E+08	8.67E-02
			1304.370	0	76665.35	2	2	3.41E+08	8.71E-02
Si II	$3s^23p-3s^23d$	$^2P^\circ-^2D$	1263.313	191.49	79348.41	6	10	2.96E+09	1.18E+00
			1265.002	287.24	79338.50	4	4	4.92E+08	1.18E-01
			1264.738	287.24	79355.02	4	6	2.95E+09	1.06E+00
			1260.422	0	79338.50	2	4	2.48E+09	1.18E+00
Si II	$3s^23p-3s3p^2$	$^2P^\circ-^2P$	1194.096	191.49	83936.82	6	6	4.10E+09	8.76E-01
			1197.394	287.24	83801.95	4	2	1.36E+09	1.46E-01
			1194.500	287.24	84004.26	4	4	3.41E+09	7.29E-01
			1193.290	0	83801.95	2	2	2.74E+09	5.84E-01
			1190.416	0	84004.26	2	4	6.90E+08	2.93E-01
Si II	$3s^23p-3s^25s$	$^2P^\circ-^2S$	1022.6978	191.49	97972.09	6	2	2.89E+08	1.51E-02
			1023.7002	287.24	97972.09	4	2	1.92E+08	1.51E-02
			1020.6989	0	97972.09	2	2	9.67E+07	1.51E-02
Si II	$3s^23p-3s^24d$	$^2P^\circ-^2D$	991.7453	191.49	101023.83	6	10	6.92E+08	1.70E-01
			992.6956	287.24	101023.05	4	4	1.15E+08	1.70E-02
			992.6828	287.24	101024.35	4	6	6.90E+08	1.53E-01
			989.8731	0	101023.05	2	4	5.82E+08	1.71E-01
Si II	$3s^23p-3s^26s$	$^2P^\circ-^2S$	900.9580	191.49	111184.46	6	2	1.40E+08	5.69E-03
			901.7359	287.24	111184.46	4	2	9.33E+07	5.69E-03
			899.4063	0	111184.46	2	2	4.70E+07	5.70E-03
Si II	$3s^23p-3s^25d$	$^2P^\circ-^2D$	891.2405	191.49	112394.66	6	10	2.18E+08	4.33E-02
			892.0024	287.24	112394.56	4	4	3.63E+07	4.33E-03
			892.0011	287.24	112394.72	4	6	2.17E+08	3.89E-02
			889.7228	0	112394.56	2	4	1.83E+08	4.34E-02
Si II	$3s^23p-3s^27s$	$^2P^\circ-^2S$	849.4495	191.49	117914.80	6	2	7.74E+07	2.79E-03
			850.1409	287.24	117914.80	4	2	5.13E+07	2.78E-03
			848.0700	0	117914.80	2	2	2.59E+07	2.79E-03
Si II	$3s^23p-3s^26d$	$^2P^\circ-^2D$	845.0842	191.49	118522.90	6	10	9.36E+07	1.67E-02
			845.7688	287.24	118522.86	4	4	1.56E+07	1.67E-03
			845.7683	287.24	118522.93	4	6	9.32E+07	1.50E-02
			843.7191	0	118522.86	2	4	7.82E+07	1.67E-02
Si II	$3s^23p-3s^28s$	$^2P^\circ-^2S$	822.2137	191.49	121814.38	6	2	4.71E+07	1.59E-03
			822.8615	287.24	121814.38	4	2	3.13E+07	1.59E-03
			820.9211	0	121814.38	2	2	1.58E+07	1.60E-03
Si II	$3s^23p-3s^27d$	$^2P^\circ-^2D$	819.8601	191.49	122163.52	6	10	4.86E+07	8.17E-03
			820.5045	287.24	122163.48	4	4	8.08E+06	8.16E-04
			820.5041	287.24	122163.54	4	6	4.85E+07	7.35E-03
			818.5752	0	122163.48	2	4	4.07E+07	8.18E-03
Si II	$3s^23p-3s^29s$	$^2P^\circ-^2S$	805.8978	191.49	124276.7	6	2	3.08E+07	1.00E-03
			806.5202	287.24	124276.7	4	2	2.05E+07	1.00E-03
			804.6561	0	124276.7	2	2	1.03E+07	1.00E-03
Si II	$3s^23p-3s^28d$	$^2P^\circ-^2D$	804.4780	191.49	124495.7	6	10	2.85E+07	4.61E-03
			805.0981	287.24	124495.7	4	6	2.85E+07	4.15E-03
			805.0981	287.24	124495.7	4	4	4.74E+06	4.61E-04
			803.2406	0	124495.7	2	4	2.39E+07	4.62E-03
Si II	$3s^23p-3s3p(^3P^\circ)4p$	$^2P^\circ-^2P$	754.9638	191.49	132648.2	6	6	3.21E+07	2.74E-03
			755.8301	287.24	132592.1	4	2	1.06E+07	4.56E-04
			755.3500	287.24	132676.2	4	4	2.67E+07	2.28E-03
			754.1927	0	132592.1	2	2	2.15E+07	1.83E-03
			753.7147	0	132676.2	2	4	5.37E+06	9.14E-04
Si III	$3s^2-3s3p$	$^1S-^1P^\circ$	1206.500	0	82884.41	1	3	2.57E+09	1.68E+00
Si III	$3s^2-3s4p$	$^1S-^1P^\circ$	566.6134	0	176487.19	1	3	1.07E+08	1.55E-02
Si III	$3s^2-3s5p$	$^1S-^1P^\circ$	466.1306	0	214532.17	1	3	1.44E+08	1.41E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si III	$3s^2-3p4s$	$1S-1P^o$	437.2545	0	228699.75	1	3	5.62E+07	4.83E-03
Si III	$3s^2-3s6p$	$1S-1P^o$	426.6437	0	234387.64	1	3	5.07E+06	4.15E-04
Si III	$3s^2-3p3d$	$1S-1P^o$	423.8166	0	235951.09	1	3	2.24E+07	1.81E-03
Si III	$3s^2-3s7p$	$1S-1P^o$	408.3775	0	244871.47	1	3	3.81E+07	2.86E-03
Si IV	$2p^63s-2p^63p$	$2S-2P^o$	1396.747	0	71594.94	2	6	8.93E+08	7.84E-01
			1402.770	0	71287.54	2	2	8.81E+08	2.60E-01
			1393.755	0	71748.64	2	4	9.00E+08	5.24E-01
Si IV	$2p^63s-2p^64p$	$2S-2P^o$	457.9284	0	218374.73	2	6	3.75E+08	3.54E-02
			458.1548	0	218266.86	2	2	3.75E+08	1.18E-02
			457.8154	0	218428.67	2	4	3.76E+08	2.36E-02
Si IV	$2p^63s-2p^65p$	$2S-2P^o$	361.5932	0	276553.91	2	6	2.74E+08	1.61E-02
			361.6589	0	276503.67	2	2	2.74E+08	5.37E-03
			361.5603	0	276579.03	2	4	2.76E+08	1.08E-02
Si IV	$2p^63s-2p^66p$	$2S-2P^o$	327.1518	0	305668.55	2	6	1.74E+08	8.36E-03
			327.1811	0	305641.10	2	2	1.74E+08	2.79E-03
			327.1371	0	305682.27	2	4	1.74E+08	5.57E-03
Si IV	$2p^63s-2p^67p$	$2S-2P^o$	310.2415	0	322329.53	2	6	1.13E+08	4.89E-03
			310.2575	0	322312.93	2	2	1.13E+08	1.63E-03
			310.2335	0	322337.83	2	4	1.13E+08	3.25E-03
Si IV	$2p^63s-2p^68p$	$2S-2P^o$	300.5218	0	332754.57	2	6	7.63E+07	3.10E-03
			300.5315	0	332743.87	2	2	7.68E+07	1.04E-03
			300.5170	0	332759.92	2	4	7.64E+07	2.07E-03
Si V	$2s^22p^6-2p^53s$	$1S-1P^o$	117.8535	0	848511.2	1	3	3.94E+10	2.46E-01
Si V	$2s^22p^6-2p^53d$	$1S-1P^o$	96.4399	0	1036915	1	3	2.58E+11	1.08E+00
Si VI	$2s^22p^5-2s2p^6$	$2P^o-2S$	247.035	1697	406497	6	2	2.62E+10	7.98E-02
			249.124	5090	406497	2	2	8.51E+09	7.92E-02
			246.004	0	406497	4	2	1.77E+10	8.02E-02
Si VI	$2s^22p^5-2p^4(^3P)3s$	$2P^o-2P$	99.5062	1697	1006659	6	6	7.88E+10	1.17E-01
			99.9660	5090	1005430	2	4	1.29E+10	3.86E-02
			99.5988	5090	1009118	2	2	5.22E+10	7.76E-02
			99.4599	0	1005430	4	4	6.55E+10	9.72E-02
			99.0964	0	1009118	4	2	2.65E+10	1.95E-02
Si VI	$2s^22p^5-2p^4(^1D)3s$	$2P^o-2D$	96.1777	1697	1041438	6	10	3.05E+10	7.06E-02
			96.4895	5090	1041472	2	4	2.52E+10	7.04E-02
			96.0231	0	1041416	4	6	3.07E+10	6.37E-02
			96.0179	0	1041472	4	4	5.11E+09	7.07E-03
Si VI	$2s^22p^5-2p^4(^1S)3s$	$2P^o-2S$	91.5120	1697	1094449	6	2	3.18E+10	1.33E-02
			91.7971	5090	1094449	2	2	1.04E+10	1.32E-02
			91.3702	0	1094449	4	2	2.13E+10	1.33E-02
Si VI	$2s^22p^5-2p^4(^3P)3d$	$2P^o-2D$	83.2973	1697	1202220	6	10	2.43E+11	4.22E-01
			83.6113	5090	1201100	2	4	2.00E+11	4.20E-01
			83.2570	0	1201100	4	4	4.06E+10	4.22E-02
			83.1283	0	1202960	4	6	2.45E+11	3.81E-01
Si VI	$2s^22p^5-2p^4(^3P)3d$	$2P^o-2P$	83.2154	1697	1203400	6	6	7.97E+10	8.27E-02
			83.6386	5090	1200710	2	2	5.23E+10	5.49E-02
			83.3576	5090	1204740	2	4	1.32E+10	2.76E-02
			83.2841	0	1200710	4	2	2.65E+10	1.38E-02
Si VI	$2s^22p^5-2p^4(^1D)3d$	$2P^o-2S$	83.0055	0	1204740	4	4	6.69E+10	6.91E-02
			80.8085	1697	1239190	6	2	3.68E+11	1.20E-01
			81.0307	5090	1239190	2	2	1.22E+11	1.20E-01
			80.6979	0	1239190	4	2	2.46E+11	1.20E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si VI	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2P$	80.6582	1697	1241500	6	6	3.38E+11	3.30E-01
			80.9088	5090	1241050	2	4	5.60E+10	1.10E-01
			80.8211	5090	1242390	2	2	2.25E+11	2.20E-01
			80.5769	0	1241050	4	4	2.83E+11	2.75E-01
			80.4900	0	1242390	4	2	1.13E+11	5.51E-02
Si VI	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2D$	80.5374	1697	1243360	6	10	2.11E+11	3.42E-01
			80.7252	5090	1243860	2	4	1.75E+11	3.41E-01
			80.4492	0	1243020	4	6	2.12E+11	3.08E-01
			80.3949	0	1243860	4	4	3.54E+10	3.43E-02
Si VI	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^\circ - ^2D$	77.5239	1697	1291620	6	10	5.39E+10	8.10E-02
			77.7182	5090	1291790	2	4	4.46E+10	8.08E-02
			77.4287	0	1291510	4	6	5.41E+10	7.30E-02
			77.4120	0	1291790	4	4	9.03E+09	8.11E-03
Si VI	$2s^2 2p^5 - 2p^4(^3P)4s$	$^2P^\circ - ^2P$	75.290	1697	1329900	6	6	2.79E+10	2.37E-02
			75.483	5090	1329900	2	4	4.61E+09	7.87E-03
			75.194	0	1329900	4	4	2.32E+10	1.97E-02
				5090		2	2	1.86E+10	1.58E-02
				0		4	2	9.27E+09	3.94E-03
Si VI	$2s^2 2p^5 - 2p^4(^1D)4s$	$^2P^\circ - ^2D$	72.986	1697	1371820	6	10	8.71E+09	1.16E-02
			72.8959?	0	1371820?	4	6	8.79E+09	1.05E-02
				5090		2	4	7.26E+09	1.16E-02
				0		4	4	1.45E+09	1.16E-03
Si VI	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^\circ - ^2P$	71.3691	1697	1402860	6	6	8.60E+10	6.57E-02
			71.5615	5090	1402490	2	2	5.69E+10	4.37E-02
			71.5328	5090	1403050	2	4	1.43E+10	2.19E-02
			71.3018	0	1402490	4	2	2.86E+10	1.09E-02
			71.2733	0	1403050	4	4	7.20E+10	5.48E-02
Si VI	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^\circ - ^2D$	71.2670	1697	1404870	6	10	1.73E+11	2.20E-01
			71.1810?	0	1404870?	4	6	1.75E+11	1.99E-01
				5090		2	4	1.44E+11	2.20E-01
				0		4	4	2.89E+10	2.20E-02
Si VI	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^\circ - ^2D$	69.3043	1697	1444610	6	10	6.73E+10	8.08E-02
			69.4483?	5090	1445010?	2	4	5.58E+10	8.07E-02
			69.2358?	0	1444340?	4	6	6.76E+10	7.29E-02
			69.2037?	0	1445010?	4	4	1.13E+10	8.10E-03
Si VI	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^\circ - ^2D$	66.8479	1697	1497630	6	10	6.75E+09	7.54E-03
			66.7722?	0	1497630?	4	6	6.78E+09	6.80E-03
				5090		2	4	5.61E+09	7.52E-03
				0		4	4	1.12E+09	7.52E-04
Si VII	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	275.456	1962	364997	9	9	1.24E+10	1.41E-01
			278.443	4030	363170	3	5	3.00E+09	5.81E-02
			276.839	5565	366786	1	3	4.06E+09	1.40E-01
			275.667	4030	366786	3	3	3.09E+09	3.52E-02
			275.353	0	363170	5	5	9.33E+09	1.06E-01
			274.175	4030	368761	3	1	1.26E+10	4.72E-02
			272.639	0	366786	5	3	5.32E+09	3.56E-02
Si VII	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	85.4330	1962	1172470	9	3	1.30E+11	4.76E-02
			85.6968	5565	1172470	1	3	1.44E+10	4.74E-02
			85.5842	4030	1172470	3	3	4.33E+10	4.75E-02
			85.2900	0	1172470	5	3	7.27E+10	4.76E-02
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	81.7536	1962	1225150	9	15	4.22E+10	7.04E-02
			81.9951	5565	1225150	1	3	2.32E+10	7.02E-02
			81.8920	4030	1225150	3	5	3.14E+10	5.27E-02
			81.8920	4030	1225150	3	3	1.75E+10	1.76E-02
			81.6227	0	1225150	5	7	4.23E+10	5.92E-02
			81.6227	0	1225150	5	5	1.06E+10	1.06E-02
			81.6227	0	1225150	5	3	1.18E+09	7.05E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si VII	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P-^3P^\circ$	79.3727	1962	1261840	9	9	4.21E+10	3.98E-02
			79.6150	5565	1261610	1	3	1.39E+10	3.97E-02
			79.5229?	4030	1261530?	3	1	4.18E+10	1.32E-02
			79.5178	4030	1261610	3	3	1.05E+10	9.93E-03
			79.4906	4030	1262040	3	5	1.05E+10	1.66E-02
			79.2638	0	1261610	5	3	1.76E+10	9.97E-03
			79.2368	0	1262040	5	5	3.18E+10	2.99E-02
Si VII	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P-^3D^\circ$	73.2337	1962	1367450	9	15	2.04E+11	2.74E-01
			73.4325	5565	1367360	1	3	1.13E+11	2.73E-01
			73.3498	4030	1367360	3	5	1.52E+11	2.05E-01
			73.3498	4030	1367360	3	3	8.48E+10	6.84E-02
			73.1336	0	1367360	5	5	5.14E+10	4.12E-02
			73.1336	0	1367360	5	3	5.69E+09	2.74E-03
			73.1229	0	1367560	5	7	2.06E+11	2.31E-01
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3D^\circ$	70.1219	1962	1428050	9	15	2.98E+11	3.66E-01
			70.2218	4030	1428090	3	5	2.22E+11	2.73E-01
			70.0270	0	1428020	5	7	2.98E+11	3.07E-01
			70.0236	0	1428090	5	5	7.45E+10	5.48E-02
				5565		1	3	1.65E+11	3.66E-01
				4030		3	3	1.24E+11	9.14E-02
				0		5	3	8.27E+09	3.66E-03
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3P^\circ$	69.7359	1962	1435940	9	9	5.20E+11	3.79E-01
			69.8722	5565	1436750	1	3	1.72E+11	3.78E-01
			69.8602	4030	1435460	3	5	1.30E+11	1.58E-01
			69.7973	4030	1436750	3	3	1.30E+11	9.46E-02
			69.6641	0	1435460	5	5	3.90E+11	2.84E-01
			69.6015	0	1436750	5	3	2.18E+11	9.48E-02
				4030		3	1	5.18E+11	1.26E-01
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P-^3S^\circ$	69.4797	1962	1441230	9	3	5.31E+11	1.28E-01
			69.6541	5565	1441230	1	3	5.87E+10	1.28E-01
			69.5797	4030	1441230	3	3	1.76E+11	1.28E-01
			69.3852	0	1441230	5	3	2.96E+11	1.28E-01
Si VII	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P-^3P^\circ$	68.5218	1962	1461350	9	9	7.20E+10	5.07E-02
			68.7146	5565	1460860	1	3	2.38E+10	5.05E-02
			68.6691	4030	1460290	3	1	7.17E+10	1.69E-02
			68.6422	4030	1460860	3	3	1.80E+10	1.27E-02
			68.5951	4030	1461860	3	5	1.79E+10	2.11E-02
			68.4528	0	1460860	5	3	3.01E+10	1.27E-02
			68.4060	0	1461860	5	5	5.42E+10	3.80E-02
Si VII	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P-^3D^\circ$	68.2569	1962	1467015	9	15	2.60E+11	3.03E-01
			68.3779	4030	1466490	3	5	1.94E+11	2.27E-01
			68.1900	0	1466490	5	5	6.53E+10	4.55E-02
			68.1482	0	1467390	5	7	2.62E+11	2.55E-01
				5565		1	3	1.45E+11	3.03E-01
				4030		3	3	1.09E+11	7.58E-02
				0		5	3	7.23E+09	3.03E-03
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)4s$	$^3P-^3D^\circ$	61.3799	1962	1631160	9	15	2.73E+10	2.57E-02
			61.3061	0	1631160	5	7	2.74E+10	2.16E-02
				4030		3	5	2.04E+10	1.92E-02
				5565		1	3	1.52E+10	2.57E-02
				0		5	5	6.82E+09	3.85E-03
				4030		3	3	1.14E+10	6.42E-03
				0		5	3	7.58E+08	2.57E-04
Si VII	$2s^2 2p^4 - 2p^3(^4S^\circ)4d$	$^3P-^3D^\circ$	60.9096	1962	1643740	9	15	1.26E+11	1.17E-01
			60.8369	0	1643740	5	7	1.26E+11	9.81E-02
				4030		3	5	9.44E+10	8.75E-02
				5565		1	3	7.01E+10	1.17E-01
				0		5	5	3.15E+10	1.75E-02
				4030		3	3	5.25E+10	2.92E-02
				0		5	3	3.51E+09	1.17E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm $^{-1}$	$E_k$ , cm $^{-1}$	$g_i$	$g_k$	$A_{ki}$ , s $^{-1}$	$f_{ik}$
Si VII	$2s^2 2p^4 - 2p^3(^2P^\circ)4s$	$^3P-^3P^\circ$	59.954	1962	1669900	9	9	1.54E+10	8.31E-03
			60.029	4030	1669900	3	5	3.84E+09	3.46E-03
			59.884	0	1669900	5	5	1.16E+10	6.24E-03
				4030		3	3	3.84E+09	2.07E-03
				0		5	3	6.43E+09	2.08E-03
				4030		3	1	1.54E+10	2.77E-03
				5565		1	3	5.13E+09	8.30E-03
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P-^3D^\circ$	58.6466	1962	1707090	9	15	8.34E+10	7.17E-02
			58.7178	4030	1707090	3	5	6.22E+10	5.36E-02
			58.5792	0	1707090	5	7	8.37E+10	6.03E-02
			58.5792	0	1707090	5	5	2.08E+10	1.07E-02
				5565		1	3	4.63E+10	7.17E-02
				4030		3	3	3.47E+10	1.79E-02
				0		5	3	2.32E+09	7.17E-04
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P-^3P^\circ$	58.5121	1962	1711010	9	9	1.60E+11	8.22E-02
			58.5830	4030	1711010	3	5	4.00E+10	3.43E-02
			58.4450	0	1711010	5	5	1.21E+11	6.18E-02
				4030		3	3	4.01E+10	2.06E-02
				0		5	3	6.69E+10	2.06E-02
				4030		3	1	1.60E+11	2.74E-02
				5565		1	3	5.34E+10	8.22E-02
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P-^3S^\circ$	58.4550	1962	1712680	9	3	2.41E+11	4.12E-02
			58.5784	5565	1712680	1	3	2.66E+10	4.11E-02
			58.5257	4030	1712680	3	3	8.02E+10	4.12E-02
			58.3880	0	1712680	5	3	1.35E+11	4.13E-02
Si VII	$2s^2 2p^4 - 2p^3(^2P^\circ)4d$	$^3P-^3P^\circ$	57.4987	1962	1741130	9	9	5.25E+10	2.60E-02
			57.5672	4030	1741130	3	5	1.30E+10	1.08E-02
			57.4340	0	1741130	5	5	3.94E+10	1.95E-02
				4030		3	3	1.31E+10	6.50E-03
				0		5	3	2.19E+10	6.50E-03
				4030		3	1	5.25E+10	8.67E-03
				5565		1	3	1.75E+10	2.60E-02
Si VII	$2s^2 2p^4 - 2p^3(^2P^\circ)4d$	$^3P-^3D^\circ$	57.3895	1962	1744440	9	15	8.89E+10	7.32E-02
			57.3250	0	1744440	5	7	8.93E+10	6.16E-02
				4030		3	5	6.67E+10	5.49E-02
				5565		1	3	4.94E+10	7.32E-02
				0		5	5	2.23E+10	1.10E-02
				4030		3	3	3.71E+10	1.83E-02
				0		5	3	2.47E+09	7.32E-04
Si VII	$2s^2 2p^4 - 2p^3(^4S^\circ)5d$	$^3P-^3D^\circ$	56.5906	1962	1769040	9	15	1.15E+11	9.18E-02
			56.5278	0	1769040	5	7	1.15E+11	7.72E-02
				4030		3	5	8.60E+10	6.88E-02
				5565		1	3	6.37E+10	9.18E-02
				0		5	5	2.87E+10	1.38E-02
				4030		3	3	4.77E+10	2.29E-02
				0		5	3	3.19E+09	9.18E-04
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)5d$	$^3P-^3D^\circ$	54.5804	1962	1834120	9	15	1.10E+09	8.21E-04
			54.5221	0	1834120	5	7	1.11E+09	6.90E-04
				4030		3	5	8.26E+08	6.15E-04
				5565		1	3	6.12E+08	8.20E-04
				0		5	5	2.75E+08	1.23E-04
				4030		3	3	4.59E+08	2.05E-04
				0		5	3	3.06E+07	8.20E-06
Si VII	$2s^2 2p^4 - 2p^3(^2D^\circ)5d$	$^3P-^3P^\circ$	54.5203	1962	1836140	9	9	5.70E+10	2.54E-02
			54.5819	4030	1836140	3	5	1.42E+10	1.06E-02
			54.4621	0	1836140	5	5	4.30E+10	1.91E-02
				4030		3	3	1.43E+10	6.36E-03
				0		5	3	2.38E+10	6.36E-03
				4030		3	1	5.71E+10	8.48E-03
				5565		1	3	1.90E+10	2.54E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si VIII	$2s^2 2p^3 - 2s 2p^4$	$4S^\circ - 4P$	317.69	0	314775	4	12	3.92E+09	1.78E-01
			319.83	0	312670	4	6	3.83E+09	8.82E-02
			316.21	0	316250	4	4	3.96E+09	5.94E-02
			314.33	0	318140	4	2	4.04E+09	2.99E-02
Si VIII	$2s^2 2p^3 - 2p^2(^3P)3s$	$4S^\circ - 4P$	69.7301	0	1434100	4	12	5.44E+10	1.19E-01
			69.9051	0	1430510	4	2	5.43E+10	1.99E-02
			69.7900	0	1432870	4	4	5.45E+10	3.98E-02
			69.6321	0	1436120	4	6	5.48E+10	5.98E-02
Si VIII	$2s^2 2p^3 - 2p^2(^3P)3d$	$4S^\circ - 4P$	61.0394	0	1638285	4	12	9.07E+11	1.52E+00
			61.0698	0	1637470	4	6	9.11E+11	7.64E-01
			61.0191	0	1638830	4	4	9.14E+11	5.10E-01
			60.9890	0	1639640	4	2	9.15E+11	2.55E-01
Si VIII	$2s^2 2p^3 - 2p^3(^5S^\circ)3p$	$4S^\circ - 4P$	58.8848	0	1698230	4	12	1.12E+11	1.75E-01
			58.8848?	0	1698230?	4	6	1.12E+11	8.76E-02
			58.8848?	0	1698230?	4	4	1.12E+11	5.84E-02
			58.8848?	0	1698230?	4	2	1.12E+11	2.92E-02
Si VIII	$2s^2 2p^3 - 2p^2(^3P)4d$	$4S^\circ - 4P$	50.0062	0	1999750	4	12	2.79E+11	3.14E-01
			50.0190	0	1999240	4	6	2.79E+11	1.57E-01
			49.9870?	0	2000520?	4	4	2.80E+11	1.05E-01
				0		4	2	2.80E+11	5.25E-02
Si IX	$2s^2 2p^2 - 2s 2p^3$	$3P - 3D^\circ$	347.363	4412	292295	9	15	2.30E+09	6.94E-02
			349.873	6414	292232	5	7	2.25E+09	5.79E-02
			349.795	6414	292296	5	5	5.61E+08	1.03E-02
			349.617	6414	292441	5	3	6.28E+07	6.90E-04
			345.124	2545.0	292296	3	5	1.76E+09	5.24E-02
			344.951	2545.0	292441	3	3	9.75E+08	1.74E-02
			341.949	0	292441	1	3	1.34E+09	7.05E-02
Si IX	$2s^2 2p^2 - 2s 2p^3$	$3P - 3P^\circ$	294.408	4412	344077	9	9	6.04E+09	7.85E-02
			296.213	6414	344009	5	3	2.47E+09	1.95E-02
			296.117	6414	344118	5	5	4.46E+09	5.86E-02
			292.857	2545.0	344009	3	3	1.54E+09	1.98E-02
			292.800	2545.0	344075	3	1	6.14E+09	2.63E-02
			292.763	2545.0	344118	3	5	1.54E+09	3.29E-02
			290.690	0	344009	1	3	2.09E+09	7.95E-02
Si IX	$2s^2 2p^2 - 2s 2p^3$	$3P - 3S^\circ$	225.973	4412	446942	9	3	3.67E+10	9.37E-02
			227.000	6414	446942	5	3	2.01E+10	9.33E-02
			225.024	2545.0	446942	3	3	1.24E+10	9.41E-02
			223.743	0	446942	1	3	4.21E+09	9.47E-02
Si IX	$2s^2 2p^2 - 2s^2 2p 3s$	$3P - 3P^\circ$	61.6459	4412	1626580	9	9	1.16E+11	6.61E-02
			61.8442	6414	1623380	5	3	4.80E+10	1.65E-02
			61.6966	2545.0	1623380	3	3	2.89E+10	1.65E-02
			61.6490	6414	1628500	5	5	8.70E+10	4.96E-02
			61.5999	0	1623380	1	3	3.88E+10	6.62E-02
			61.5023	2545.0	1628500	3	5	2.92E+10	2.76E-02
				2545.0		3	1	1.16E+11	2.20E-02
Si IX	$2s^2 2p^2 - 2s^2 2p 3d$	$3P - 3D^\circ$	55.3842	4412	1809980	9	15	1.09E+12	8.38E-01
			55.5017	6414	1808160	5	3	3.02E+10	8.37E-03
			55.4746	6414	1809040	5	5	2.73E+11	1.26E-01
			55.4012	6414	1811430	5	7	1.09E+12	7.04E-01
			55.3828	2545.0	1808160	3	3	4.54E+11	2.09E-01
			55.3558	2545.0	1809040	3	5	8.21E+11	6.29E-01
			55.3048	0	1808160	1	3	6.11E+11	8.40E-01
Si IX	$2s^2 2p^2 - 2s^2 2p 3d$	$3P - 3P^\circ$	55.1914	4412	1816290	9	9	6.09E+11	2.78E-01
			55.2719	6414	1815650	5	5	4.54E+11	2.08E-01
			55.2338	6414	1816900	5	3	2.53E+11	6.94E-02
			55.1540	2545.0	1815650	3	5	1.53E+11	1.16E-01
			55.1160	2545.0	1816900	3	3	1.53E+11	6.96E-02
			55.0938	2545.0	1817630	3	1	6.12E+11	9.29E-02
			55.0388	0	1816900	1	3	2.05E+11	2.79E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si IX	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3S^o$	53.9337	4412	1858540	9	3	2.61E+11	3.80E-02
			53.9920?	6414	1858540?	5	3	1.45E+11	3.80E-02
			53.8795?	2545.0	1858540?	3	3	8.73E+10	3.80E-02
			53.8057?	0	1858540?	1	3	2.93E+10	3.81E-02
Si IX	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3D^o$	52.8154	4412	1897800	9	15	2.25E+11	1.57E-01
			52.9180	6414	1896130	5	5	5.57E+10	2.34E-02
			52.8380	6414	1898990	5	7	2.25E+11	1.32E-01
			52.8099	2545.0	1896130	3	5	1.69E+11	1.18E-01
				0		1	3	1.24E+11	1.56E-01
				2545.0		3	3	9.30E+10	3.89E-02
				6414		5	3	6.22E+09	1.56E-03
Si IX	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3D^o$	44.2272	4412	2265460	9	15	3.81E+11	1.86E-01
			44.2908?	6414	2264220?	5	5	9.45E+10	2.78E-02
			44.2490?	6414	2266350?	5	7	3.80E+11	1.56E-01
			44.2150?	2545.0	2264220?	3	5	2.85E+11	1.39E-01
				0		1	3	2.11E+11	1.86E-01
				2545.0		3	3	1.58E+11	4.64E-02
Si X	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2D$	353.10	4660.4	287868	6	10	2.09E+09	6.51E-02
			356.05	6990.6	287850	4	4	3.40E+08	6.46E-03
			356.01	6990.6	287880	4	6	2.04E+09	5.81E-02
			347.40	0	287850	2	4	1.83E+09	6.62E-02
Si X	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2S$	275.47	4660.4	367670	6	2	9.10E+09	3.45E-02
			277.25	6990.6	367670	4	2	5.94E+09	3.42E-02
			271.98	0	367670	2	2	3.15E+09	3.49E-02
Si X	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2P$	257.71	4660.4	392700	6	6	1.73E+10	1.72E-01
			261.06	6990.6	390040	4	2	5.52E+09	2.82E-02
			258.37	6990.6	394030	4	4	1.43E+10	1.43E-01
			256.38	0	390040	2	2	1.17E+10	1.15E-01
			253.79	0	394030	2	4	3.01E+09	5.82E-02
Si X	$2s^2 2p - 2s^2 3s$	$^2P^o - ^2S$	55.025	4660.4	1822000	6	2	1.61E+11	2.43E-02
			55.096	6990.6	1822000	4	2	1.07E+11	2.43E-02
			54.885	0	1822000	2	2	5.40E+10	2.44E-02
Si X	$2s^2 2p - 2s^2 3d$	$^2P^o - ^2D$	50.6359	4660.4	1979540	6	10	9.77E+11	6.26E-01
			50.7030?	6990.6	1979260?	4	4	1.62E+11	6.25E-02
			50.6909	6990.6	1979730	4	6	9.73E+11	5.62E-01
			50.5239?	0	1979260?	2	4	8.20E+11	6.28E-01
Si X	$2s^2 2p - 2s 2p(^3P^o) 3p$	$^2P^o - ^2P$	48.5114	4660.4	2066030	6	6	3.71E+11	1.31E-01
			48.6003	6990.6	2064590	4	2	1.24E+11	2.19E-02
			48.5494	6990.6	2066750	4	4	3.08E+11	1.09E-01
			48.4358	0	2064590	2	2	2.50E+11	8.79E-02
			48.3851	0	2066750	2	4	6.27E+10	4.40E-02
Si X	$2s^2 2p - 2s 2p(^3P^o) 3p$	$^2P^o - ^2D$	47.5331	4660.4	2108460	6	10	4.18E+11	2.36E-01
			47.6472	6990.6	2105750?	4	4	6.90E+10	2.35E-02
			47.5450	6990.6	2110260	4	6	4.19E+11	2.13E-01
			47.4890	0	2105750?	2	4	3.49E+11	2.36E-01
Si X	$2s^2 2p - 2s 2p(^3P^o) 3p$	$^2P^o - ^2S$	46.994	4660.4	2132600	6	2	4.29E+11	4.74E-02
			47.045	6990.6	2132600	4	2	2.85E+11	4.73E-02
			46.891	0	2132600	2	2	1.44E+11	4.75E-02
Si X	$2s^2 2p - 2s 2p(^1P^o) 3p$	$^2P^o - ^2P$	44.793	4660.4	2237100	6	6	1.34E+11	4.04E-02
			44.859	6990.6	2236200	4	2	4.46E+10	6.73E-03
			44.831	6990.6	2237600	4	4	1.12E+11	3.37E-02
			44.719	0	2236200	2	2	9.01E+10	2.70E-02
			44.691	0	2237600	2	4	2.25E+10	1.35E-02
Si X	$2s^2 2p - 2s 2p(^1P^o) 3p$	$^2P^o - ^2S$	44.610	4660.4	2246300	6	2	7.81E+10	7.77E-03
			44.657	6990.6	2246300	4	2	5.19E+10	7.76E-03
			44.518	0	2246300	2	2	2.62E+10	7.78E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si X	$2s^2 2p-2s^2 4d$	$^2P^o-^2D$	39.5155	4660.4	2535310	6	10	3.25E+11	1.27E-01
			39.5520	6990.6	2535310	4	6	3.27E+11	1.15E-01
			39.5520	6990.6	2535310	4	4	5.46E+10	1.28E-02
			39.4429	0	2535310	2	4	2.72E+11	1.27E-01
Si X	$2s^2 2p-2s^2 p(^3P^o)4p$	$^2P^o-^2D$	37.189	4660.4	2693600	6	10	1.77E+11	6.12E-02
			37.256	6990.6	2691100	4	4	2.94E+10	6.11E-03
			37.198	6990.6	2695300	4	6	1.77E+11	5.51E-02
			37.160	0	2691100	2	4	1.48E+11	6.13E-02
Si X	$2s^2 2p-2s^2 5d$	$^2P^o-^2D$	35.9020	4660.4	2790020	6	10	1.56E+11	5.04E-02
			35.9321	6990.6	2790020	4	6	1.56E+11	4.53E-02
				0		2	4	1.30E+11	5.03E-02
				6990.6		4	4	2.60E+10	5.03E-03
Si X	$2s^2 2p-2s^2 6d$	$^2P^o-^2D$	34.2107	4660.4	2927720	6	10	8.21E+10	2.40E-02
			34.2380?	6990.6	2927720?	4	6	8.19E+10	2.16E-02
				0		2	4	6.84E+10	2.40E-02
				6990.6		4	4	1.37E+10	2.40E-03
Si XI	$2s^2-2s2p$	$^1S-^1P^o$	303.325	0	329679	1	3	6.40E+09	2.65E-01
Si XI	$2s^2-2s3p$	$^1S-^1P^o$	43.7623	0	2285070	1	3	6.77E+11	5.83E-01
Si XI	$2s^2-2p3s$	$^1S-^1P^o$	40.4722	0	2470830	1	3	2.77E+10	2.04E-02
Si XI	$2s^2-2p3d$	$^1S-^1P^o$	38.6090	0	2590070	1	3	5.01E+10	3.36E-02
Si XI	$2s^2-2s4p$	$^1S-^1P^o$	33.5133	0	2983890	1	3	3.03E+11	1.53E-01
Si XI	$2s^2-2p4s$	$^1S-^1P^o$	31.6213	0	3162421	1	3	9.23E+07	4.15E-05
Si XI	$2s^2-2p4d$	$^1S-^1P^o$	31.0826	0	3217230	1	3	3.38E+10	1.47E-02
Si XI	$2s^2-2s5p$	$^1S-^1P^o$	30.3218	0	3297960	1	3	1.47E+11	6.09E-02
Si XI	$2s^2-2p5d$	$^1S-^1P^o$	28.4766	0	3511650	1	3	1.10E+10	4.01E-03
Si XII	$1s^2 2s-1s^2 2p$	$^2S-^2P^o$	506.297	0	197513	2	6	9.19E+08	1.06E-01
			520.665	0	192062	2	2	8.49E+08	3.45E-02
			499.406	0	200238	2	4	9.61E+08	7.19E-02
Si XII	$1s^2 2s-1s^2 3p$	$^2S-^2P^o$	40.9243	0	2443530	2	6	4.55E+11	3.43E-01
			40.9510	0	2441940	2	2	4.53E+11	1.14E-01
			40.9110	0	2444330	2	4	4.56E+11	2.29E-01
Si XII	$1s^2 2s-1s^2 4p$	$^2S-^2P^o$	31.0156	0	3224180	2	6	2.04E+11	8.83E-02
			31.0227	0	3223450	2	2	2.04E+11	2.94E-02
			31.0121	0	3224550	2	4	2.04E+11	5.89E-02
Si XII	$1s^2 2s-1s^2 5p$	$^2S-^2P^o$	27.8980	0	3584480	2	6	1.06E+11	3.70E-02
			27.9006	0	[3584150]	2	2	1.05E+11	1.23E-02
			27.8967	0	[3584650]	2	4	1.06E+11	2.47E-02
Si XII	$1s^2 2s-1s^2 6p$	$^2S-^2P^o$	26.4571	0	3779700	2	6	6.16E+10	1.94E-02
			26.4585	0	[3779500]	2	2	6.15E+10	6.45E-03
			26.4564	0	[3779800]	2	4	6.15E+10	1.29E-02
Si XII	$1s^2 2s-1s^2 7p$	$^2S-^2P^o$	25.6589	0	3897280	2	6	3.88E+10	1.15E-02
			25.6598	0	[3897150]	2	2	3.88E+10	3.83E-03
			25.6585	0	[3897350]	2	4	3.88E+10	7.65E-03
Si XIII	$1s^2-1s2p$	$^1S-^1P^o$	6.6480	0	[15042040]	1	3	3.81E+13	7.57E-01
Si XIII	$1s^2-1s3p$	$^1S-^1P^o$	5.6807	0	[17603422]	1	3	1.05E+13	1.52E-01
Si XIII	$1s^2-1s4p$	$^1S-^1P^o$	5.4046	0	[18502736]	1	3	4.32E+12	5.68E-02
Si XIII	$1s^2-1s5p$	$^1S-^1P^o$	5.2856	0	[18919421]	1	3	2.19E+12	2.75E-02
Si XIII	$1s^2-1s6p$	$^1S-^1P^o$	5.2231	0	[19145877]	1	3	1.26E+12	1.54E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Si XIII	$1s^2-1s7p$	$^1S-^1P^o$	5.1861	0	[19282456]	1	3	7.89E+11	9.54E-03
Si XIII	$1s^2-1s8p$	$^1S-^1P^o$	5.1623	0	[19371113]	1	3	5.27E+11	6.32E-03
Si XIII	$1s^2-1s9p$	$^1S-^1P^o$	5.1462	0	[19431902]	1	3	3.70E+11	4.41E-03
Si XIII	$1s^2-1s10p$	$^1S-^1P^o$	5.1347	0	[19475387]	1	3	2.70E+11	3.20E-03
Si XIV	$1s-2p$	$^2S-^2P^o$	6.1822	0	16175365	2	6	2.42E+13	4.16E-01
			6.1858	0	[16165930]	2	2	2.42E+13	1.39E-01
			6.1804	0	[16180083]	2	4	2.42E+13	2.77E-01
Si XIV	$1s-3p$	$^2S-^2P^o$	5.2172	0	19167339	2	6	6.45E+12	7.90E-02
			5.2180	0	[19164543]	2	2	6.44E+12	2.63E-02
			5.2168	0	[19168737]	2	4	6.46E+12	5.27E-02
Si XIV	$1s-4p$	$^2S-^2P^o$	4.9469	0	20214660	2	6	2.63E+12	2.90E-02
			4.9472	0	[20213481]	2	2	2.64E+12	9.67E-03
			4.9468	0	[20215250]	2	4	2.63E+12	1.93E-02
Si XIV	$1s-5p$	$^2S-^2P^o$	4.8311	0	20699347	2	6	1.32E+12	1.39E-02
			4.8312	0	[20698744]	2	2	1.33E+12	4.65E-03
			4.8310	0	[20699649]	2	4	1.33E+12	9.30E-03
Si XIV	$1s-6p$	$^2S-^2P^o$	4.7704	0	20962590	2	6	7.62E+11	7.80E-03
			4.7705	0	[20962241]	2	2	7.62E+11	2.60E-03
			4.7704	0	[20962765]	2	4	7.62E+11	5.20E-03
Si XIV	$1s-7p$	$^2S-^2P^o$	4.7346	0	21121293	2	6	4.78E+11	4.82E-03
			4.7346	0	[21121074]	2	2	4.76E+11	1.60E-03
			4.7345	0	[21121403]	2	4	4.78E+11	3.21E-03
Si XIV	$1s-8p$	$^2S-^2P^o$	4.7116	0	21224285	2	6	3.19E+11	3.19E-03
			4.7116	0	[21224359]	2	4	3.18E+11	2.12E-03
			4.7116	0	[21224138]	2	2	3.18E+11	1.06E-03
Si XIV	$1s-9p$	$^2S-^2P^o$	4.6960	0	21294889	2	6	2.24E+11	2.22E-03
			4.6960	0	[21294941]	2	4	2.24E+11	1.48E-03
			4.6960	0	[21294786]	2	2	2.23E+11	7.38E-04
Si XIV	$1s-10p$	$^2S-^2P^o$	4.6849	0	21345387	2	6	1.62E+11	1.60E-03
			4.6849	0	[21345312]	2	2	1.63E+11	5.35E-04
			4.6848	0	[21345425]	2	4	1.63E+11	1.07E-03
S I	$3s^23p^4-3p^3(^4S^o)4s$	$^3P-^3S^o$	1813.7281	195.756	55330.811	9	3	5.12E+08	8.42E-02
			1826.2448	573.640	55330.811	1	3	5.57E+07	8.36E-02
			1820.3412	396.055	55330.811	3	3	1.69E+08	8.39E-02
			1807.3113	0	55330.811	5	3	2.88E+08	8.45E-02
S I	$3s^23p^4-3p^3(^2D^o)4s$	$^3P-^3D^o$	1478.5044	195.756	67831.671	9	15	7.47E+07	4.08E-02
			1487.1500	573.640	67816.351	1	3	4.07E+07	4.05E-02
			1483.2329	396.055	67816.351	3	3	3.06E+07	1.01E-02
			1483.0385	396.055	67825.188	3	5	5.55E+07	3.05E-02
			1474.5706	0	67816.351	5	3	2.09E+06	4.09E-04
			1474.3785	0	67825.188	5	5	1.88E+07	6.14E-03
			1473.9943	0	67842.867	5	7	7.54E+07	3.44E-02
S I	$3s^23p^4-3p^3(^4S^o)3d$	$^3P-^3D^o$	1429.1073	195.756	70169.507	9	15	2.80E+08	1.43E-01
			1436.9672	573.640	70164.650	1	3	1.53E+08	1.42E-01
			1433.3096	396.055	70164.650	3	3	1.16E+08	3.57E-02
			1433.2781	396.055	70166.187	3	5	2.08E+08	1.07E-01
			1425.2191	0	70164.650	5	3	7.88E+06	1.44E-03
			1425.1879	0	70166.187	5	5	7.09E+07	2.16E-02
			1425.0300	0	70173.960	5	7	2.84E+08	1.21E-01
S I	$3s^23p^4-3p^3(^4S^o)5s$	$^3P-^3S^o$	1405.3699	195.756	71351.399	9	3	1.44E+08	1.42E-02
			1412.8732	573.640	71351.399	1	3	1.57E+07	1.41E-02
			1409.3371	396.055	71351.399	3	3	4.73E+07	1.41E-02
			1401.5142	0	71351.399	5	3	8.04E+07	1.42E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S I	$3s^23p^4-3s3p^5$	$^3P-^3P^o$	1388.7297	195.756	72204.010	9	9	1.75E+06	5.07E-04
			1396.1130	396.055	72023.495	3	5	4.31E+05	2.10E-04
			1392.5892	573.640	72382.328	1	3	5.80E+05	5.06E-04
			1389.1537	396.055	72382.328	3	3	4.36E+05	1.26E-04
			1388.4358	0	72023.495	5	5	1.32E+06	3.81E-04
			1385.5103	396.055	72571.630	3	1	1.77E+06	1.70E-04
S I	$3s^23p^4-3p^3(^4S^o)4d$	$^3P-^3D^o$	1319.985	195.756	75954.22	9	15	6.16E+07	2.68E-02
			1326.642	573.640	75951.95	1	3	3.37E+07	2.67E-02
			1323.523	396.055	75951.95	3	3	2.55E+07	6.69E-03
			1323.516	396.055	75952.35	3	5	4.59E+07	2.01E-02
			1316.622	0	75951.95	5	3	1.73E+06	2.69E-04
			1316.615	0	75952.35	5	5	1.55E+07	4.03E-03
S I	$3s^23p^4-3p^3(^4S^o)6s$	$^3P-^3S^o$	1306.764	195.756	76720.65	9	3	5.38E+07	4.59E-03
			1313.249	573.640	76720.65	1	3	5.89E+06	4.57E-03
			1310.194	396.055	76720.65	3	3	1.78E+07	4.58E-03
			1303.430	0	76720.65	5	3	3.01E+07	4.60E-03
S I	$3s^23p^4-3p^3(^2P^o)4s$	$^3P-^3P^o$	1299.208	195.756	77165.74	9	9	4.39E+08	1.11E-01
			1305.884	573.640	77150.14	1	3	1.45E+08	1.11E-01
			1303.110	396.055	77135.52	3	1	4.36E+08	3.70E-02
			1302.862	396.055	77150.14	3	3	1.09E+08	2.77E-02
			1302.336	396.055	77181.15	3	5	1.09E+08	4.62E-02
			1296.174	0	77150.14	5	3	1.84E+08	2.78E-02
S I	$3s^23p^4-3p^3(^4S^o)5d$	$^3P-^3D^o$	1295.653	0	77181.15	5	5	3.32E+08	8.36E-02
			1273.950	195.756	78691.80	9	15	1.02E+07	4.13E-03
			1280.100	573.640	78692.53	1	3	5.58E+06	4.11E-03
			1277.216	396.055	78691.37	3	5	7.56E+06	3.08E-03
			1277.197	396.055	78692.53	3	3	4.17E+06	1.02E-03
			1270.787	0	78691.37	5	5	2.56E+06	6.21E-04
S I	$3s^23p^4-3p^3(^4S^o)7s$	$^3P-^3S^o$	1270.780	0	78691.80	5	7	1.02E+07	3.47E-03
			1270.769	0	78692.53	5	3	2.85E+05	4.14E-05
			1265.990	195.756	79185.35	9	3	2.48E+07	1.99E-03
			1272.075	573.640	79185.35	1	3	2.73E+06	1.99E-03
			1269.208	396.055	79185.35	3	3	8.24E+06	1.99E-03
			1262.860	0	79185.35	5	3	1.39E+07	2.00E-03
S I	$3s^23p^4-3p^3(^4S^o)6d$	$^3P-^3D^o$	1250.193	195.756	80183.40	9	15	2.26E+05	8.84E-05
			1256.093	573.640	80185.60	1	3	1.24E+05	8.80E-05
			1253.325	396.055	80183.83	3	5	1.68E+05	6.61E-05
			1253.297	396.055	80185.60	3	3	9.34E+04	2.20E-05
			1247.160	0	80182.16	5	7	2.28E+05	7.44E-05
			1247.134	0	80183.83	5	5	5.70E+04	1.33E-05
S I	$3s^23p^4-3p^3(^4S^o)8s$	$^3P-^3S^o$	1247.107	0	80185.60	5	3	6.33E+03	8.86E-07
			1244.932	195.756	80521.46	9	3	1.32E+07	1.02E-03
			1250.816	573.640	80521.46	1	3	1.44E+06	1.01E-03
			1248.044	396.055	80521.46	3	3	4.33E+06	1.01E-03
			1241.905	0	80521.46	5	3	7.35E+06	1.02E-03
S I	$3s^23p^4-3p^3(^4S^o)7d$	$^3P-^3D^o$	1236.306	195.756	81081.89	9	15	1.09E+06	4.16E-04
			1242.066	573.640	81084.67	1	3	5.97E+05	4.14E-04
			1239.366	396.055	81082.46	3	5	8.13E+05	3.12E-04
			1239.332	396.055	81084.67	3	3	4.52E+05	1.04E-04
			1233.345	0	81080.29	5	7	1.10E+06	3.51E-04
			1233.312	0	81082.46	5	5	2.75E+05	6.26E-05
S I	$3s^23p^4-3p^3(^4S^o)9s$	$^3P-^3S^o$	1233.279	0	81084.67	5	3	3.05E+04	4.17E-06
			1232.574	195.756	81326.81	9	3	7.57E+06	5.75E-04
			1238.341	573.640	81326.81	1	3	8.31E+05	5.73E-04
			1235.624	396.055	81326.81	3	3	2.51E+06	5.74E-04
S I			1229.607	0	81326.81	5	3	4.24E+06	5.77E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S I	$3s^2 3p^4 - 3p^3(^4S^\circ)8d$	$^3P-^3D^\circ$	1227.459	195.756	81664.88	9	15	3.37E+06	1.27E-03
			1233.132	573.640	81667.93	1	3	1.84E+06	1.26E-03
			1230.473	396.055	81665.61	3	5	2.51E+06	9.51E-04
			1230.438	396.055	81667.93	3	3	1.40E+06	3.17E-04
			1224.544	0	81663.05	5	7	3.40E+06	1.07E-03
			1224.506	0	81665.61	5	5	8.50E+05	1.91E-04
			1224.471	0	81667.93	5	3	9.42E+04	1.27E-05
S I	$3s^2 3p^4 - 3p^3(^4S^\circ)10s$	$^3P-^3S^\circ$	1224.681	195.756	81849.68	9	3	4.72E+06	3.54E-04
			1230.375	573.640	81849.68	1	3	5.18E+05	3.53E-04
			1227.692	396.055	81849.68	3	3	1.56E+06	3.53E-04
			1221.752	0	81849.68	5	3	2.64E+06	3.55E-04
S I	$3s^2 3p^4 - 3p^3(^4S^\circ)9d$	$^3P-^3D^\circ$	1221.484	195.756	82063.37	9	15	4.85E+06	1.81E-03
			1227.091	573.640	82067.22	1	3	2.66E+06	1.80E-03
			1224.480	396.055	82063.40	3	5	3.60E+06	1.35E-03
			1224.422	396.055	82067.22	3	3	2.00E+06	4.50E-04
			1218.595	0	82061.70	5	7	4.88E+06	1.52E-03
			1218.570	0	82063.40	5	5	1.22E+06	2.72E-04
			1218.513	0	82067.22	5	3	1.36E+05	1.81E-05
S I	$3s^2 3p^4 - 3p^3(^4S^\circ)11s$	$^3P-^3S^\circ$	1219.328	195.756	82208.17	9	3	3.12E+06	2.32E-04
			1224.972	573.640	82208.17	1	3	3.42E+05	2.31E-04
			1222.313	396.055	82208.17	3	3	1.03E+06	2.31E-04
			1216.424	0	82208.17	5	3	1.74E+06	2.32E-04
S I	$3s^2 3p^4 - 3p^3(^4S^\circ)10d$	$^3P-^3D^\circ$	1217.196	195.756	82351.79	9	15	5.38E+06	1.99E-03
			1222.799	573.640	82353.25	1	3	2.94E+06	1.98E-03
			1220.163	396.055	82352.35	3	5	4.01E+06	1.49E-03
			1220.149	396.055	82353.25	3	3	2.22E+06	4.96E-04
			1214.318	0	82350.77	5	7	5.43E+06	1.68E-03
			1214.294	0	82352.35	5	5	1.35E+06	2.99E-04
			1214.281	0	82353.25	5	3	1.50E+05	1.99E-05
S I	$3s^2 3p^4 - 3p^3(^2D^\circ)3d$	$^3P-^3P^\circ$	1158.777	195.756	86493.66	9	9	9.64E+07	1.94E-02
			1163.996	573.640	86484.57	1	3	3.17E+07	1.93E-02
			1161.749	396.055	86473.17	3	1	9.56E+07	6.45E-03
			1161.595	396.055	86484.57	3	3	2.39E+07	4.84E-03
			1161.344	396.055	86503.21	3	5	2.39E+07	8.07E-03
			1156.276	0	86484.57	5	3	4.05E+07	4.87E-03
			1156.026	0	86503.21	5	5	7.29E+07	1.46E-02
S I	$3s^2 3p^4 - 3p^3(^2D^\circ)4d$	$^3P-^3P^\circ$	1095.21	195.756	91502	9	9	8.12E+07	1.46E-02
			1099.96	573.640	91486	1	3	2.68E+07	1.46E-02
			1098.02?	396.055	91469?	3	1	8.08E+07	4.87E-03
			1097.82	396.055	91486	3	3	2.03E+07	3.66E-03
			1097.42	396.055	91519	3	5	2.02E+07	6.09E-03
			1093.06	0	91486	5	3	3.42E+07	3.68E-03
			1092.67	0	91519	5	5	6.15E+07	1.10E-02
S I	$3s^2 3p^4 - 3p^3(^2D^\circ)5d^*$	$^3P-^3P^\circ$	1061.74	195.756	94381	9	9	4.87E+06	8.23E-04
			1066.01	573.640	94381	1	3	1.60E+06	8.20E-04
			1064.00	396.055	94381	3	3	1.21E+06	2.05E-04
			1064.00	396.055	94381	3	5	1.21E+06	3.42E-04
			1064.00	396.055	94381	3	1	4.84E+06	2.74E-04
			1059.54	0	94381	5	5	3.68E+06	6.19E-04
			1059.54	0	94381	5	3	2.04E+06	2.06E-04
S I	$3s^2 3p^4 - 3p^3(^2P^\circ)3d^*$	$^3P-^3P^\circ$	1061.37	195.756	94414	9	9	1.10E+08	1.86E-02
			1065.64	573.640	94414	1	3	3.62E+07	1.85E-02
			1063.63	396.055	94414	3	3	2.74E+07	4.65E-03
			1063.63	396.055	94414	3	5	2.75E+07	7.76E-03
			1063.63	396.055	94414	3	1	1.10E+08	6.20E-03
			1059.16	0	94414	5	5	8.32E+07	1.40E-02
			1059.16	0	94414	5	3	4.63E+07	4.67E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S I	$3s^23p^4-3p^3(^2D^o)6d^*$	$^3P-^3P^o$	1052.61	195.756	95198	9	9	1.73E+08	2.87E-02
			1056.91	573.640	95189	1	3	5.69E+07	2.86E-02
			1055.02?	396.055	95181?	3	1	1.72E+08	9.54E-03
			1054.93	396.055	95189	3	3	4.29E+07	7.16E-03
			1054.74	396.055	95206	3	5	4.28E+07	1.19E-02
			1050.54	0	95189	5	3	7.25E+07	7.20E-03
			1050.35	0	95206	5	5	1.30E+08	2.15E-02
S I	$3s^23p^4-3p^3(^2P^o)5s^*$	$^3P-^3P^o$	1047.90	195.756	95625	9	9	1.01E+08	1.66E-02
			1052.06	573.640	95625	1	3	3.31E+07	1.65E-02
			1050.10	396.055	95625	3	3	2.51E+07	4.15E-03
			1050.10	396.055	95625	3	5	2.51E+07	6.92E-03
			1050.10	396.055	95625	3	1	1.00E+08	5.53E-03
			1045.75	0	95625	5	5	7.62E+07	1.25E-02
			1045.75	0	95625	5	3	4.24E+07	4.17E-03
S I	$3s^23p^4-3p^3(^2D^o)7d$	$^3P-^3P^o$	1040.41	195.756	96312	9	9	1.77E+07	2.88E-03
			1044.51	573.640	96312	1	3	5.85E+06	2.87E-03
			1042.58	396.055	96312	3	3	4.41E+06	7.18E-04
			1042.58	396.055	96312	3	5	4.42E+06	1.20E-03
			1042.58	396.055	96312	3	1	1.76E+07	9.57E-04
			1038.29	0	96312	5	5	1.34E+07	2.16E-03
			1038.29	0	96312	5	3	7.45E+06	7.22E-04
S II	$3s^23p^3-3s3p^4$	$^4S^o-^4P$	1256.117	0	79610.41	4	12	4.37E+07	3.10E-02
			1259.519	0	79395.39	4	6	4.34E+07	1.55E-02
			1253.811	0	79756.83	4	4	4.37E+07	1.03E-02
			1250.584	0	79962.61	4	2	4.44E+07	5.20E-03
S II	$3s^23p^3-3p^2(^3P)4s$	$^4S^o-^4P$	909.0500	0	110004.94	4	12	1.00E+09	3.73E-01
			912.7361	0	109560.69	4	2	9.94E+08	6.21E-02
			910.4849	0	109831.59	4	4	9.98E+08	1.24E-01
			906.8765	0	110268.60	4	6	1.01E+09	1.87E-01
S II	$3s^23p^3-3p^2(^3P)3d$	$^4S^o-^4P$	764.9224	0	130732.21	4	12	9.04E+09	2.38E+00
			765.6838	0	130602.21	4	6	9.03E+09	1.19E+00
			764.4158	0	130818.85	4	4	9.07E+09	7.95E-01
			763.6564	0	130948.94	4	2	9.10E+09	3.98E-01
S II	$3s^23p^3-3p^2(^3P)5s$	$^4S^o-^4P$	663.4890	0	150718.39	4	12	2.79E+08	5.52E-02
			665.5197	0	150258.51	4	2	2.76E+08	9.18E-03
			664.3136	0	150531.31	4	4	2.78E+08	1.84E-02
			662.2674	0	150996.41	4	6	2.81E+08	2.77E-02
S II	$3s^23p^3-3p^2(^3P)4d$	$^4S^o-^4P$	641.2560	0	155943.95	4	12	2.81E+09	5.20E-01
			641.7715	0	155818.71	4	6	2.81E+09	2.60E-01
			640.9043	0	156029.54	4	4	2.83E+09	1.74E-01
			640.4161	0	156148.48	4	2	2.82E+09	8.68E-02
S II	$3s^23p^3-3p^2(^3P)6s$	$^4S^o-^4P$	601.7201	0	166190.23	4	12	9.40E+07	1.53E-02
			603.4303	0	165719.23	4	2	9.34E+07	2.55E-03
			602.4410	0	165991.35	4	4	9.37E+07	5.10E-03
			600.6734	0	166479.82	4	6	9.46E+07	7.68E-03
S II	$3s^23p^3-3p^2(^3P)5d$	$^4S^o-^4P$	594.0962	0	168322.92	4	12	1.05E+09	1.66E-01
			594.4699	0	168217.10	4	6	1.04E+09	8.28E-02
			593.8317	0	168397.89	4	4	1.04E+09	5.52E-02
			593.5055	0	168490.43	4	2	1.05E+09	2.76E-02
S II	$3s^23p^3-3p^2(^3P)7s$	$^4S^o-^4P$	575.3725	0	173800.44	4	12	4.93E+07	7.34E-03
			576.9780	0	173316.83	4	2	4.89E+07	1.22E-03
			576.0509	0	173595.77	4	4	4.90E+07	2.44E-03
			574.3888	0	174098.10	4	6	4.96E+07	3.68E-03
S II	$3s^23p^3-3p^2(^3P)6d$	$^4S^o-^4P$	571.5367	0	174966.89	4	12	4.91E+08	7.21E-02
			571.7790	0	174892.75	4	6	4.90E+08	3.60E-02
			571.3640	0	175019.78	4	4	4.90E+08	2.40E-02
			571.1560	0	175083.51	4	2	4.91E+08	1.20E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S II	$3s^2 3p^3 - 3p^2(^3P)7d$	$^4S^\circ - ^4P$	558.9993	0	178891.10	4	12	2.66E+08	3.74E-02
			559.1310	0	178848.96	4	6	2.66E+08	1.87E-02
			558.9240	0	178915.20	4	4	2.67E+08	1.25E-02
			558.7550	0	178969.32	4	2	2.67E+08	6.24E-03
S III	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3D^\circ$	1197.56	562.39	84065.8	9	15	7.00E+07	2.51E-02
			1202.12	833.08	84019.3	5	3	1.92E+06	2.50E-04
			1201.73	833.08	84046.7	5	5	1.73E+07	3.75E-03
			1200.97	833.08	84099.4	5	7	6.94E+07	2.10E-02
			1194.45	298.69	84019.3	3	3	2.94E+07	6.29E-03
			1194.06	298.69	84046.7	3	5	5.31E+07	1.89E-02
			1190.20	0	84019.3	1	3	3.97E+07	2.53E-02
S III	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3P^\circ$	1018.405	562.39	98755.2	9	9	2.71E+08	4.22E-02
			1021.323	833.08	98745.3	5	5	2.02E+08	3.16E-02
			1021.108	833.08	98765.9	5	3	1.13E+08	1.06E-02
			1015.779	298.69	98745.3	3	5	6.83E+07	1.76E-02
			1015.567	298.69	98765.9	3	3	6.86E+07	1.06E-02
			1015.502	298.69	98772.2	3	1	2.74E+08	1.41E-02
			1012.495	0	98765.9	1	3	9.22E+07	4.25E-02
S III	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3S^\circ$	727.2504	562.39	138066.6	9	3	1.32E+10	3.50E-01
			728.6849	833.08	138066.6	5	3	7.33E+09	3.50E-01
			725.8584	298.69	138066.6	3	3	4.44E+09	3.51E-01
			724.2881	0	138066.6	1	3	1.49E+09	3.52E-01
S III	$3s^2 3p^2 - 3s^2 3p4s;^*$	$^3P - ^3P^\circ$	701.4731	562.39	143119.52	9	9	1.06E+10	7.80E-01
			702.8181	833.08	143117.41	5	3	4.39E+09	1.95E-01
			702.7792	833.08	143125.28	5	5	7.89E+09	5.84E-01
			700.2880	298.69	143097.08	3	1	1.06E+10	2.60E-01
			700.1883	298.69	143117.41	3	3	2.65E+09	1.95E-01
			700.1497	298.69	143125.28	3	5	2.66E+09	3.26E-01
			698.7270	0	143117.41	1	3	3.57E+09	7.83E-01
S III	$3s^2 3p^2 - 3s^2 3p3d;^*$	$^3P - ^3P^\circ$	683.0684	562.39	146960.62	9	9	9.74E+08	6.81E-02
			685.3800	833.08	146737.55	5	3	4.00E+08	1.69E-02
			683.4615	833.08	147147.11	5	5	7.30E+08	5.11E-02
			683.0663	298.69	146697.37	3	1	9.74E+08	2.27E-02
			682.8788	298.69	146737.55	3	3	2.43E+08	1.70E-02
			681.4888	0	146737.55	1	3	3.27E+08	6.83E-02
			680.9743	298.69	147147.11	3	5	2.46E+08	2.85E-02
S III	$3s^2 3p^2 - 3s^2 3p3d$	$^3P - ^3D^\circ$	679.6864	562.39	147689.05	9	15	1.42E+10	1.64E+00
			681.5772	833.08	147551.60	5	3	3.90E+08	1.63E-02
			680.9246	833.08	147692.21	5	5	3.52E+09	2.45E-01
			680.6767	833.08	147745.70	5	7	1.41E+10	1.37E+00
			679.1037	298.69	147551.60	3	3	5.92E+09	4.09E-01
			678.4559	298.69	147692.21	3	5	1.07E+10	1.23E+00
			677.7290	0	147551.60	1	3	7.94E+09	1.64E+00
S III	$3s^2 3p^2 - 3s^2 3p4d$	$^3P - ^3D^\circ$	484.9755	562.39	206758.35	9	15	9.82E+08	5.77E-02
			486.1276	833.08	206540.39	5	3	2.71E+07	5.76E-04
			485.8142	833.08	206673.11	5	5	2.44E+08	8.65E-03
			485.2495	833.08	206912.65	5	7	9.81E+08	4.85E-02
			484.8680	298.69	206540.39	3	3	4.09E+08	1.44E-02
			484.5562	298.69	206673.11	3	5	7.40E+08	4.34E-02
			484.1668	0	206540.39	1	3	5.48E+08	5.78E-02
S III	$3s^2 3p^2 - 3s^2 3p4d$	$^3P - ^3P^\circ$	482.0748	562.39	207999.06	9	9	5.11E+08	1.78E-02
			482.9520	833.08	207892.98	5	5	3.80E+08	1.33E-02
			482.4583	833.08	208104.89	5	3	2.13E+08	4.45E-03
			481.7088	298.69	207892.98	3	5	1.28E+08	7.42E-03
			481.2176	298.69	208104.89	3	3	1.28E+08	4.46E-03
			480.9698	298.69	208211.96	3	1	5.15E+08	5.95E-03
			480.5269	0	208104.89	1	3	1.72E+08	1.79E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S III	$3s^23p^2-3s^23p5s$	$^3P-^3P^o$	476.6970	562.39	210339.27	9	9	7.90E+08	2.69E-02
			478.2530	833.08	209927.43	5	3	3.27E+08	6.72E-03
			477.3812	298.69	209774.91	3	1	7.88E+08	8.98E-03
			477.0338	298.69	209927.43	3	3	1.98E+08	6.74E-03
			476.4942	833.08	210699.24	5	5	5.93E+08	2.02E-02
			476.3551	0	209927.43	1	3	2.65E+08	2.70E-02
S IV	$3s^23p-3s3p^2$	$^2P^o-^2D$	475.2839	298.69	210699.24	3	5	2.00E+08	1.13E-02
			1069.551	634.29	94131.5	6	10	1.69E+08	4.84E-02
			1073.518	951.43	94103.1	4	4	2.80E+07	4.83E-03
			1072.973	951.43	94150.4	4	6	1.68E+08	4.34E-02
S IV	$3s^23p-3s3p^2$	$^2P^o-^2S$	1062.664	0	94103.1	2	4	1.44E+08	4.87E-02
			813.8351	634.29	123509.3	6	2	3.11E+09	1.03E-01
			815.9411	951.43	123509.3	4	2	2.06E+09	1.03E-01
			809.6556	0	123509.3	2	2	1.06E+09	1.04E-01
S IV	$3s^23p-3s3p^2$	$^2P^o-^2P$	749.6111	634.29	134036.8	6	6	8.89E+09	7.49E-01
			753.7603	951.43	133619.6	4	2	2.91E+09	1.24E-01
			750.2215	951.43	134245.4	4	4	7.39E+09	6.24E-01
			748.3932	0	133619.6	2	2	5.95E+09	5.00E-01
			744.9045	0	134245.4	2	4	1.51E+09	2.51E-01
S IV	$3s^23p-3s^23d$	$^2P^o-^2D$	660.0352	634.29	152141.4	6	10	1.07E+10	1.17E+00
			661.4554	951.43	152133.2	4	4	1.78E+09	1.17E-01
			661.3959	951.43	152146.8	4	6	1.08E+10	1.06E+00
			657.3187	0	152133.2	2	4	9.11E+09	1.18E+00
S IV	$3s^23p-3s^24s$	$^2P^o-^2S$	553.0551	634.29	181448.1	6	2	5.67E+09	8.66E-02
			554.0268	951.43	181448.1	4	2	3.76E+09	8.65E-02
			551.1218	0	181448.1	2	2	1.91E+09	8.69E-02
S IV	$3s^23p-3s^24d$	$^2P^o-^2D$	392.5198	634.29	255398.5	6	10	1.33E+06	5.13E-05
			393.0132	951.43	255395.8	4	4	2.22E+05	5.13E-06
			393.0063	951.43	255400.3	4	6	1.33E+06	4.62E-05
			391.5491	0	255395.8	2	4	1.12E+06	5.15E-05
S IV	$3s^23p-3s^25s$	$^2P^o-^2S$	369.8408	634.29	271020.9	6	2	2.33E+09	1.59E-02
			370.2751	951.43	271020.9	4	2	1.56E+09	1.60E-02
			368.9752	0	271020.9	2	2	7.79E+08	1.59E-02
S IV	$3s^23p-3s3p(^3P^o)4p$	$^2P^o-^2P$	342.2883	634.29	292785.7	6	6	7.91E+08	1.39E-02
			342.9146	951.43	292569.2	4	2	2.62E+08	2.31E-03
			342.5332	951.43	292893.9	4	4	6.59E+08	1.16E-02
			341.7995	0	292569.2	2	2	5.29E+08	9.27E-03
			341.4206	0	292893.9	2	4	1.33E+08	4.64E-03
S IV	$3s^23p-3s^25d^*$	$^2P^o-^2D$	332.4960	634.29	301389.8	6	10	5.43E+07	1.50E-03
			333.1575	951.43	301109.8	4	4	8.95E+06	1.49E-04
			332.6404	951.43	301576.4	4	6	5.43E+07	1.35E-03
			332.1048	0	301109.8	2	4	4.54E+07	1.50E-03
S IV	$3s^23p-3s3p(^3P^o)4p^*$	$^2P^o-^2D$	330.2631	634.29	303423.2	6	10	7.15E+08	1.95E-02
			330.7027	951.43	303337.8	4	4	1.19E+08	1.95E-03
			330.5472	951.43	303480.1	4	6	7.16E+08	1.76E-02
			329.6655	0	303337.8	2	4	5.98E+08	1.95E-02
S IV	$3s^23p-3s3p(^3P^o)4p$	$^2P^o-^2S$	324.5419	634.29	308760.9	6	2	6.06E+06	3.19E-05
			324.8763	951.43	308760.9	4	2	4.02E+06	3.18E-05
			323.8752	0	308760.9	2	2	2.03E+06	3.19E-05
S IV	$3s^23p-3s^26s$	$^2P^o-^2S$	321.6817	634.29	311500.6	6	2	1.72E+09	8.87E-03
			322.0102	951.43	311500.6	4	2	1.14E+09	8.86E-03
			321.0267	0	311500.6	2	2	5.75E+08	8.89E-03
S IV	$3s^23p-3s^27s$	$^2P^o-^2S$	300.9046	634.29	332965.5	6	2	7.54E+08	3.41E-03
			301.1921	951.43	332965.5	4	2	5.00E+08	3.40E-03
			300.3314	0	332965.5	2	2	2.52E+08	3.41E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S IV	$3s^23p-3s3p(^1P^o)4p$	$^2P^o-^2D$	295.5935	634.29	338936.7	6	10	4.07E+08	8.89E-03
			295.9178	951.43	338883.1	4	4	6.76E+07	8.88E-04
			295.8396	951.43	338972.4	4	6	4.06E+08	7.99E-03
			295.0870	0	338883.1	2	4	3.41E+08	8.90E-03
S IV	$3s^23p-3s3p(^1P^o)4p$	$^2P^o-^2P$	294.7209	634.29	339938.3	6	6	2.23E+08	2.91E-03
			295.1051	951.43	339813.7	4	2	7.40E+07	4.83E-04
			294.9425	951.43	340000.6	4	4	1.86E+08	2.42E-03
			294.2789	0	339813.7	2	2	1.49E+08	1.93E-03
			294.1171	0	340000.6	2	4	3.74E+07	9.70E-04
S IV	$3s^23p-3s3p(^1P^o)4p$	$^2P^o-^2S$	291.3822	634.29	343826.2	6	2	4.88E+08	2.07E-03
			291.6517	951.43	343826.2	4	2	3.23E+08	2.06E-03
			290.8446	0	343826.2	2	2	1.63E+08	2.07E-03
S IV	$3s^23p-3s3p(^3P^o)5p$	$^2P^o-^2P$	274.0950	634.29	365471.3	6	6	7.27E+08	8.19E-03
			274.5053	951.43	365243.1	4	2	2.43E+08	1.37E-03
			274.2476	951.43	365585.4	4	4	6.05E+08	6.82E-03
			273.7903	0	365243.1	2	2	4.87E+08	5.47E-03
			273.5339	0	365585.4	2	4	1.22E+08	2.73E-03
S V	$3s^2-3s3p$	$^1S-^1P^o$	786.4683	0	127150.7	1	3	5.10E+09	1.42E+00
S V	$3s^2-3s4p$	$^1S-^1P^o$	286.0949	0	349534.4	1	3	2.67E+09	9.83E-02
S V	$3s^2-3p4s$	$^1S-^1P^o$	235.5568	0	424526.0	1	3	3.15E+08	7.87E-03
S V	$3s^2-3s5p$	$^1S-^1P^o$	223.2512	0	447925.9	1	3	1.37E+09	3.08E-02
S V	$3s^2-3s6p$	$^1S-^1P^o$	202.9608	0	492706.0	1	3	1.08E+09	2.01E-02
S V	$3s^2-3s7p$	$^1S-^1P^o$	192.555	0	519332	1	3	6.72E+08	1.12E-02
S V	$3s^2-3s8p$	$^1S-^1P^o$	187.024	0	534691	1	3	4.34E+08	6.82E-03
S VI	$2p^63s-2p^63p$	$^2S-^2P^o$	937.064	0	106716.3	2	6	1.68E+09	6.65E-01
			944.523	0	105873.6	2	2	1.64E+09	2.20E-01
			933.378	0	107137.7	2	4	1.70E+09	4.45E-01
S VI	$2p^63s-2p^64p$	$^2S-^2P^o$	249.0818	0	401474.5	2	6	2.94E+09	8.21E-02
			249.2714	0	401169.2	2	2	2.94E+09	2.74E-02
			248.9872	0	401627.1	2	4	2.94E+09	5.47E-02
S VI	$2p^63s-2p^65p$	$^2S-^2P^o$	191.5063	0	522176.0	2	6	1.90E+09	3.14E-02
			191.5602	0	522029.1	2	2	1.91E+09	1.05E-02
			191.4794	0	522249.5	2	4	1.90E+09	2.09E-02
S VI	$2p^63s-2p^66p$	$^2S-^2P^o$	171.3405	0	583633.2	2	6	1.17E+09	1.55E-02
			171.3645	0	583551.3	2	2	1.17E+09	5.15E-03
			171.3285	0	583674.1	2	4	1.17E+09	1.03E-02
S VI	$2p^63s-2p^67p$	$^2S-^2P^o$	161.5005	0	619193.2	2	6	7.50E+08	8.80E-03
			161.5136	0	619142.9	2	2	7.52E+08	2.94E-03
			161.4939	0	619218.4	2	4	7.51E+08	5.87E-03
S VI	$2p^63s-2p^68p$	$^2S-^2P^o$	155.857	0	641614	2	6	5.06E+08	5.53E-03
			155.865	0	[641580]	2	2	5.05E+08	1.84E-03
			155.853	0	[641631]	2	4	5.07E+08	3.69E-03
S VI	$2p^63s-2p^69p$	$^2S-^2P^o$	152.285	0	656664	2	6	3.56E+08	3.71E-03
			152.290	0	[656641]	2	2	3.57E+08	1.24E-03
			152.282	0	[656675]	2	4	3.55E+08	2.47E-03
S VII	$2s^22p^6-2p^53s$	$^1S-^1P^o$	72.0285	0	1388339	1	3	1.04E+11	2.43E-01
S VII	$2s^22p^6-2p^53d$	$^1S-^1P^o$	60.1614	0	1662194	1	3	9.83E+11	1.60E+00
S VII	$2s^22p^6-2p^54s$	$^1S-^1P^o$	54.6520	0	1829760	1	3	3.30E+10	4.43E-02
S VII	$2s^22p^6-2p^54d$	$^1S-^1P^o$	51.8070	0	1930240	1	3	5.04E+11	6.08E-01
S VII	$2s^22p^6-2p^55d$	$^1S-^1P^o$	48.6469	0	2055630	1	3	2.07E+11	2.20E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S VII	$2s^2 2p^6 - 2p^5 6d$	$^1S - ^1P^o$	47.0981	0	2123230	1	3	1.34E+11	1.34E-01
S VII	$2s^2 2p^6 - 2p^5 7d$	$^1S - ^1P^o$	46.2120	0	2163940	1	3	8.69E+10	8.35E-02
S VIII	$2s^2 2p^5 - 2s 2p^6$	$^2P^o - ^2S$	199.883 202.606 198.549	3362 10085 0	503655 503655 503655	6 2 4	2 2 2	3.64E+10 1.16E+10 2.47E+10	7.26E-02 7.16E-02 7.31E-02
S VIII	$2s^2 2p^5 - 2p^4(^3P)3s$	$^2P^o - ^2P$	63.3475 63.7131 63.4300 63.3063 63.0269	3362 10085 10085 0 0	1581956 1579622 1586625 1579622 1586625	6 2 2 4 4	6 4 2 4 2	1.88E+11 3.06E+10 1.24E+11 1.56E+11 6.28E+10	1.13E-01 3.72E-02 7.47E-02 9.36E-02 1.87E-02
S VIII	$2s^2 2p^5 - 2p^4(^1D)3s$	$^2P^o - ^2D$	61.7248 61.9785 61.5992 61.5935	3362 10085 0 0	1623457 1623547 1623397 1623547	6 2 4 4	10 4 6 4	7.26E+10 5.97E+10 7.31E+10 1.22E+10	6.91E-02 6.88E-02 6.24E-02 6.93E-03
S VIII	$2s^2 2p^5 - 2p^4(^1S)3s$	$^2P^o - ^2S$	59.3546 59.5924 59.2364	3362 10085 0	1688150 1688150 1688150	6 2 4	2 2 2	7.38E+10 2.42E+10 4.94E+10	1.30E-02 1.29E-02 1.30E-02
S VIII	$2s^2 2p^5 - 2p^5(^3P^o)3p$	$^2P^o - ^2S$	58.9528 59.1874 58.8362	3362 10085 0	1699634 1699634 1699634	6 2 4	2 2 2	1.36E+11 4.47E+10 9.13E+10	2.36E-02 2.35E-02 2.37E-02
S VIII	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2D$	54.2776 54.5653 54.2667 54.1203	3362 10085 0 0	1845742 1842752 1842752 1847735	6 2 4 4	10 4 4 6	5.80E+11 4.76E+11 9.67E+10 5.84E+11	4.27E-01 4.25E-01 4.27E-02 3.85E-01
S VIII	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^o - ^2P$	54.2724 54.6427 54.3858 54.3432 54.0891	3362 10085 10085 0 0	1845918 1840155 1848800 1840155 1848800	6 2 2 4 4	6 2 4 2 4	1.49E+11 9.76E+10 2.47E+10 4.97E+10 1.26E+11	6.59E-02 4.37E-02 2.19E-02 1.10E-02 5.52E-02
S VIII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2S$	53.0497 53.2396 52.9553	3362 10085 0	1888386 1888386 1888386	6 2 4	2 2 2	1.04E+12 3.44E+11 6.95E+11	1.46E-01 1.46E-01 1.46E-01
S VIII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2P$	52.8543 53.0721 52.9844 52.7895 52.7028	3362 10085 10085 0 0	1895354 1894315 1897432 1894315 1897432	6 2 2 4 4	6 4 2 4 2	1.12E+12 1.84E+11 7.37E+11 9.33E+11 3.75E+11	4.67E-01 1.55E-01 3.10E-01 3.90E-01 7.81E-02
S VIII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^o - ^2D$	52.8196 52.9620 52.7562 52.6806	3362 10085 0 0	1896600 1898233 1895511 1898233	6 2 4 4	10 4 6 4	7.89E+11 6.53E+11 7.92E+11 1.33E+11	5.50E-01 5.49E-01 4.96E-01 5.52E-02
S VIII	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^o - ^2D$	51.3056 51.4690 51.2267 51.2032	3362 10085 0 0	1952466 1953002 1952108 1953002	6 2 4 4	10 4 6 4	1.76E+11 1.46E+11 1.76E+11 2.95E+10	1.16E-01 1.16E-01 1.04E-01 1.16E-02
S VIII	$2s^2 2p^5 - 2p^4(^3P)4s$	$^2P^o - ^2P$	47.5951 47.7479 47.5190	3362 10085 0 10085 0	2104420 2104420 2104420 2104420 2104420	6 2 4 2 4	6 4 4 2 2	9.27E+10 1.54E+10 7.80E+10 6.18E+10 3.09E+10	3.15E-02 1.05E-02 2.64E-02 2.10E-02 5.25E-03
S VIII	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^o - ^2D$	45.3845 45.5785 45.3700 45.2790	3362 10085 0 0	2206760 2204100 2204100 2208530	6 2 4 4	10 4 4 6	3.50E+11 2.87E+11 5.83E+10 3.54E+11	1.80E-01 1.79E-01 1.80E-02 1.63E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S VIII	$2s^2 2p^5 - 2p^4(^3P)4d$	$^2P^\circ - ^2P$	45.3636	3362	2207770	6	6	1.68E+11	5.19E-02
			45.5024	10085	2207770	2	4	2.79E+10	1.73E-02
			45.2946		2207770	4	4	1.41E+11	4.34E-02
				10085		2	2	1.12E+11	3.46E-02
				0		4	2	5.60E+10	8.64E-03
S IX	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	224.876	3845	448534	9	9	1.66E+10	1.26E-01
			228.832	7985	444987	3	5	3.97E+09	5.19E-02
			226.579	10648	451995	1	3	5.41E+09	1.25E-01
			225.220	7985	451995	3	3	4.16E+09	3.16E-02
			224.726	0	444987	5	5	1.25E+10	9.50E-02
			223.262	7985	455890	3	1	1.71E+10	4.25E-02
			221.241	0	451995	5	3	7.29E+09	3.21E-02
S IX	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	56.2017	3845	1783150	9	3	2.88E+11	4.54E-02
			56.4174	10648	1783150	1	3	3.16E+10	4.52E-02
			56.3328	7985	1783150	3	3	9.52E+10	4.53E-02
			56.0805	0	1783150	5	3	1.61E+11	4.55E-02
S IX	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	54.3003	3845	1845460	9	15	9.28E+10	6.84E-02
			54.5161	10648	1844970	1	3	5.10E+10	6.82E-02
			54.4370	7985	1844970	3	3	3.85E+10	1.71E-02
			54.4311	7985	1845170	3	5	6.92E+10	5.12E-02
			54.2014	0	1844970	5	3	2.59E+09	6.85E-04
			54.1955	0	1845170	5	5	2.34E+10	1.03E-02
			54.1750	0	1845870	5	7	9.35E+10	5.76E-02
S IX	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P - ^3P^\circ$	52.9665	3845	1891830	9	9	9.20E+10	3.87E-02
			53.0829	7985	1891830	3	5	2.29E+10	1.61E-02
			52.8589	0	1891830	5	5	6.95E+10	2.91E-02
				7985		3	3	2.30E+10	9.69E-03
				0		5	3	3.84E+10	9.70E-03
				7985		3	1	9.20E+10	1.29E-02
				10648		1	3	3.07E+10	3.88E-02
S IX	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P - ^3D^\circ$	49.2197	3845	2035550	9	15	4.41E+11	2.67E-01
			49.3900	10648	2035350	1	3	2.42E+11	2.66E-01
			49.3280	7985	2035230	3	5	3.29E+11	2.00E-01
			49.3251	7985	2035350	3	3	1.83E+11	6.66E-02
			49.1345	0	2035230	5	5	1.11E+11	4.01E-02
			49.1316	0	2035350	5	3	1.23E+10	2.67E-03
			49.1190	0	2035870	5	7	4.42E+11	2.24E-01
S IX	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3D^\circ$	47.5336	3845	2107620	9	15	7.94E+11	4.48E-01
			47.7399	10648	2105330	1	3	4.35E+11	4.46E-01
			47.6793	7985	2105330	3	3	3.29E+11	1.12E-01
			47.6160	7985	2108120	3	5	5.91E+11	3.35E-01
			47.4985	0	2105330	5	3	2.21E+10	4.48E-03
			47.4356	0	2108120	5	5	1.99E+11	6.73E-02
			47.4329?	0	2108240?	5	7	7.98E+11	3.77E-01
S IX	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3P^\circ$	47.3107	3845	2117530	9	9	1.31E+12	4.38E-01
			47.4279	7985	2116450	3	5	3.24E+11	1.82E-01
			47.4230	10648	2119330	1	3	4.32E+11	4.37E-01
			47.3632	7985	2119330	3	3	3.24E+11	1.09E-01
			47.2489	0	2116450	5	5	9.80E+11	3.28E-01
			47.1847	0	2119330	5	3	5.44E+11	1.09E-01
				7985		3	1	1.31E+12	1.46E-01
S IX	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3S^\circ$	47.1323	3845	2125530	9	3	1.33E+12	1.48E-01
			47.2840	10648	2125530	1	3	1.46E+11	1.47E-01
			47.2245	7985	2125530	3	3	4.43E+11	1.48E-01
			47.0471	0	2125530	5	3	7.43E+11	1.48E-01
S IX	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3P^\circ$	46.691	3845	2145580	9	9	1.50E+11	4.89E-02
			46.857	10648	2144800	1	3	4.93E+10	4.87E-02
			46.8429	7985	2142780	3	1	1.48E+11	1.62E-02
			46.799	7985	2144800	3	3	3.72E+10	1.22E-02
			46.759	7985	2146600	3	5	3.73E+10	2.04E-02
			46.624	0	2144800	5	3	6.24E+10	1.22E-02
			46.585	0	2146600	5	5	1.13E+11	3.68E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S IX	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P-^3D^\circ$	46.4698	3845	2155780	9	15	7.47E+11	4.03E-01
			46.6067	10648	2156260	1	3	4.11E+11	4.02E-01
			46.5854	7985	2154580	3	5	5.57E+11	3.02E-01
			46.5490	7985	2156260	3	3	3.11E+11	1.01E-01
			46.4128	0	2154580	5	5	1.88E+11	6.06E-02
			46.3766	0	2156260	5	3	2.09E+10	4.04E-03
			46.3729	0	2156430	5	7	7.53E+11	3.40E-01
S IX	$2s^2 2p^4 - 2p^3(^4S^\circ)4d$	$^3P-^3D^\circ$	40.2331	3845	2489360	9	15	3.14E+11	1.27E-01
			40.1710	0	2489360	5	7	3.13E+11	1.06E-01
				7985		3	5	2.35E+11	9.50E-02
				10648		1	3	1.74E+11	1.27E-01
				0		5	5	7.83E+10	1.90E-02
				7985		3	3	1.31E+11	3.17E-02
				0		5	3	8.72E+09	1.27E-03
S IX	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P-^3D^\circ$	39.0245	3845	2566340	9	15	1.99E+11	7.56E-02
			38.9660	0	2566340	5	7	2.00E+11	6.36E-02
				7985		3	5	1.49E+11	5.67E-02
				10648		1	3	1.10E+11	7.55E-02
				0		5	5	4.95E+10	1.13E-02
				7985		3	3	8.28E+10	1.89E-02
				0		5	3	5.52E+09	7.56E-04
S IX	$2s^2 2p^4 - 2p^3(^2D^\circ)4d$	$^3P-^3P^\circ$	38.9403	3845	2571880	9	9	3.90E+11	8.87E-02
			39.0032	7985	2571880	3	5	9.71E+10	3.69E-02
			38.8821	0	2571880	5	5	2.94E+11	6.66E-02
				7985		3	3	9.72E+10	2.21E-02
				0		5	3	1.62E+11	2.21E-02
				7985		3	1	3.89E+11	2.95E-02
				10648		1	3	1.30E+11	8.85E-02
S X	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$	261.440	0	382497	4	12	5.17E+09	1.59E-01
			264.230	0	378458	4	6	5.01E+09	7.86E-02
			259.496	0	385362	4	4	5.29E+09	5.34E-02
			257.147	0	388883	4	2	5.43E+09	2.69E-02
S X	$2s^2 2p^3 - 2p^2(^3P)3s$	$^4S^\circ - ^4P$	47.7419	0	2094600	4	12	1.12E+11	1.15E-01
			47.9051	0	2087460	4	2	1.10E+11	1.90E-02
			47.7920	0	2092400	4	4	1.11E+11	3.80E-02
			47.6544	0	2098440	4	6	1.12E+11	5.72E-02
S X	$2s^2 2p^3 - 2p^2(^3P)3d$	$^4S^\circ - ^4P$	42.5173	0	2351980	4	12	2.04E+12	1.66E+00
			42.5431	0	2350560	4	6	2.03E+12	8.27E-01
			42.4950	0	2353220	4	4	2.04E+12	5.52E-01
			42.4850	0	2353770	4	2	2.04E+12	2.76E-01
S X	$2s^2 2p^3 - 2p^3(^5S^\circ)3p$	$^4S^\circ - ^4P$	41.3570	0	2417970	4	12	2.73E+11	2.10E-01
			41.3570?	0	2417970?	4	6	2.76E+11	1.06E-01
				0		4	4	2.72E+11	6.98E-02
				0		4	2	2.72E+11	3.49E-02
S X	$2s^2 2p^3 - 2p^2(^3P)4d$	$^4S^\circ - ^4P$	34.3100	0	2914600	4	12	7.12E+11	3.77E-01
			34.310?	0	2914600?	4	6	7.14E+11	1.89E-01
				0		4	4	7.14E+11	1.26E-01
				0		4	2	7.13E+11	6.29E-02
S XI	$2s^2 2p^2 - 2s2p^3$	$^3P-^3D^\circ$	288.481	8618.3	355261	9	15	2.97E+09	6.18E-02
			291.811	12388.1	355076	5	5	7.17E+08	9.16E-03
			291.578	12388.1	355350	5	7	2.87E+09	5.13E-02
			291.566	12388.1	355364	5	3	7.99E+07	6.11E-04
			285.822	5208.0	355076	3	5	2.29E+09	4.68E-02
			285.587	5208.0	355364	3	3	1.28E+09	1.56E-02
			281.402	0	355364	1	3	1.78E+09	6.33E-02
S XI	$2s^2 2p^2 - 2s2p^3$	$^3P-^3P^\circ$	244.736	8618.3	417222	9	9	7.70E+09	6.91E-02
			247.159	12388.1	416986	5	3	3.11E+09	1.71E-02
			246.895	12388.1	417419	5	5	5.62E+09	5.14E-02
			242.872	5208.0	416947	3	1	7.87E+09	2.32E-02
			242.849	5208.0	416986	3	3	1.97E+09	1.74E-02
			242.594	5208.0	417419	3	5	1.98E+09	2.91E-02
			239.816	0	416986	1	3	2.73E+09	7.05E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S XI	$2s^2 2p^2 - 2s 2p^3$	$^3P - ^3S^o$	189.90	8618.3	535220	9	3	4.50E+10	8.11E-02
			191.27	12388.1	535220	5	3	2.45E+10	8.05E-02
			188.67	5208.0	535220	3	3	1.53E+10	8.16E-02
			186.84	0	535220	1	3	5.25E+09	8.24E-02
S XI	$2s^2 2p^2 - 2s^2 2p 3s$	$^3P - ^3P^o$	43.1301	8618.3	2327185	9	9	2.27E+11	6.34E-02
			43.3300	12388.1	2320260	5	3	9.36E+10	1.58E-02
			43.1956	5208.0	2320260	3	3	5.68E+10	1.59E-02
			43.1229	12388.1	2331340	5	5	1.71E+11	4.76E-02
			43.0986	0	2320260	1	3	7.59E+10	6.34E-02
			42.9898	5208.0	2331340	3	5	5.74E+10	2.65E-02
				5208.0		3	1	2.27E+11	2.11E-02
S XI	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3D^o$	39.3157	8618.3	2552130	9	15	2.27E+12	8.78E-01
			39.4317	12388.1	2548420	5	3	6.26E+10	8.75E-03
			39.4112	12388.1	2549740	5	5	5.63E+10	1.31E-01
			39.3230	12388.1	2555430	5	7	2.27E+12	7.37E-01
			39.3204	5208.0	2548420	3	3	9.45E+11	2.19E-01
			39.3000	5208.0	2549740	3	5	1.70E+12	6.58E-01
			39.2400	0	2548420	1	3	1.27E+12	8.80E-01
S XI	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3P^o$	39.175	8618.3	2561290	9	9	1.26E+12	2.91E-01
			39.2400	12388.1	2560810	5	5	9.44E+11	2.18E-01
			39.220	12388.1	2562100	5	3	5.25E+11	7.26E-02
			39.1297	5208.0	2560810	3	5	3.16E+11	1.21E-01
			39.110	5208.0	2562100	3	3	3.17E+11	7.28E-02
			39.030	0	2562100	1	3	4.26E+11	2.92E-01
				5208.0		3	1	1.26E+12	9.67E-02
S XI	$2s^2 2p^2 - 2s 2p^2 (^4P) 3p$	$^3P - ^3D^o$	37.719	8618.3	2659800	9	15	5.04E+11	1.79E-01
			37.773	12388.1	2659800	5	7	5.01E+11	1.50E-01
				5208.0		3	5	3.74E+11	1.33E-01
				0		1	3	2.78E+11	1.78E-01
				12388.1		5	5	1.25E+11	2.67E-02
				5208.0		3	3	2.08E+11	4.44E-02
				12388.1		5	3	1.39E+10	1.78E-03
S XI	$2s^2 2p^2 - 2s^2 2p 4d$	$^3P - ^3D^o$	31.018	8618.3	3232600	9	15	8.19E+11	1.97E-01
			31.054?	12388.1	3232600?	5	7	8.15E+11	1.65E-01
				5208.0		3	5	6.11E+11	1.47E-01
				0		1	3	4.53E+11	1.96E-01
				12388.1		5	5	2.03E+11	2.93E-02
				5208.0		3	3	3.39E+11	4.89E-02
				12388.1		5	3	2.26E+10	1.96E-03
S XII	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2D$	295.748	8756.9	346883	6	10	2.63E+09	5.74E-02
			299.792	13135.3	346700	4	4	4.20E+08	5.66E-03
			299.518	13135.3	347005	4	6	2.53E+09	5.10E-02
			288.434	0	346700	2	4	2.36E+09	5.89E-02
S XII	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2S$	232.11	8756.9	439580	6	2	1.11E+10	2.98E-02
			234.50	13135.3	439580	4	2	7.16E+09	2.95E-02
			227.49	0	439580	2	2	3.92E+09	3.04E-02
S XII	$2s^2 2p - 2s 2p^2$	$^2P^o - ^2P$	217.180	8756.9	469205	6	6	2.09E+10	1.48E-01
			221.425	13135.3	464755	4	2	6.61E+09	2.43E-02
			218.200	13135.3	471430	4	4	1.72E+10	1.23E-01
			215.167	0	464755	2	2	1.44E+10	9.98E-02
			212.121	0	471430	2	4	3.75E+09	5.06E-02
S XII	$2s^2 2p - 2s^2 3d$	$^2P^o - ^2D$	36.509	8756.9	2747800	6	10	1.92E+12	6.41E-01
			36.573	13135.3	2747400	4	4	3.19E+11	6.40E-02
			36.564	13135.3	2748100	4	6	1.92E+12	5.76E-01
			36.398	0	2747400	2	4	1.62E+12	6.43E-01
S XII	$2s^2 2p - 2s 2p(^3P^o) 3p$	$^2P^o - ^2P$	35.251	8756.9	2845600	6	6	7.46E+11	1.39E-01
			35.366	13135.3	2840700	4	2	2.47E+11	2.32E-02
			35.275	13135.3	2848000	4	4	6.22E+11	1.16E-01
			35.203	0	2840700	2	2	5.02E+11	9.32E-02
			35.112	0	2848000	2	4	1.26E+11	4.67E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S XII	$2s^2 2p-2s2p(^3P^o)3p$	$^2P^o-^2D$	34.575	8756.9	2901000	6	10	8.67E+11	2.59E-01
			34.690	13135.3	2895800	4	4	1.44E+11	2.59E-02
			34.586	13135.3	2904500	4	6	8.70E+11	2.34E-01
			34.533	0	2895800	2	4	7.27E+11	2.60E-01
S XII	$2s^2 2p-2s2p(^3P^o)3p$	$^2P^o-^2S$	34.234	8756.9	2929800	6	2	9.03E+11	5.29E-02
			34.286?	13135.3	2929800?	4	2	6.00E+11	5.29E-02
			34.132?	0	2929800?	2	2	3.04E+11	5.31E-02
S XII	$2s^2 2p-2s2p(^1P^o)3p$	$^2P^o-^2D$	32.76	8756.9	3061000	6	10	7.16E+10	1.92E-02
			32.81	13135.3	3061000	4	6	7.10E+10	1.72E-02
			32.81	13135.3	3061000	4	4	1.18E+10	1.91E-03
			32.67	0	3061000	2	4	6.00E+10	1.92E-02
S XII	$2s^2 2p-2s^2 4d$	$^2P^o-^2D$	28.292	8756.9	3543300	6	10	6.25E+11	1.25E-01
			28.327	13135.3	3543300	4	6	6.21E+11	1.12E-01
			28.327	13135.3	3543300	4	4	1.04E+11	1.25E-02
			28.222	0	3543300	2	4	5.28E+11	1.26E-01
S XII	$2s^2 2p-2s2p(^3P^o)4p$	$^2P^o-^2D$	26.86	8756.9	3732000	6	10	3.66E+11	6.60E-02
			26.89?	13135.3	3732000?	4	6	3.65E+11	5.93E-02
				0		2	4	3.04E+11	6.57E-02
				13135.3		4	4	6.07E+10	6.57E-03
S XII	$2s^2 2p-2s^2 5d$	$^2P^o-^2D$	25.63	8756.9	3911000	6	10	2.55E+11	4.19E-02
			25.66	13135.3	3911000	4	6	2.55E+11	3.77E-02
			25.66	13135.3	3911000	4	4	4.24E+10	4.18E-03
			25.57	0	3911000	2	4	2.14E+11	4.20E-02
S XII	$2s^2 2p-2s^2 6d$	$^2P^o-^2D$	24.39	8756.9	4108000	6	10	1.63E+11	2.42E-02
			24.42?	13135.3	4108000?	4	6	1.62E+11	2.17E-02
				0		2	4	1.36E+11	2.42E-02
				13135.3		4	4	2.71E+10	2.42E-03
S XII	$2s^2 2p-2s^2 7d$	$^2P^o-^2D$	23.70	8756.9	4228000	6	10	1.03E+11	1.45E-02
			23.73?	13135.3	4228000?	4	6	1.03E+11	1.31E-02
				0		2	4	8.61E+10	1.45E-02
				13135.3		4	4	1.72E+10	1.45E-03
S XIII	$2s^2-2s2p$	$^1S-^1P^o$	256.685	0	389583	1	3	7.76E+09	2.30E-01
S XIII	$2s^2-2s3p$	$^1S-^1P^o$	32.242	0	3101500	1	3	1.31E+12	6.13E-01
S XIII	$2s^2-2p3s$	$^1S-^1P^o$	30.077	0	3324800	1	3	6.41E+10	2.61E-02
S XIII	$2s^2-2p3d$	$^1S-^1P^o$	28.926	0	3457100	1	3	8.82E+10	3.32E-02
S XIII	$2s^2-2s4p$	$^1S-^1P^o$	24.590	0	4066700	1	3	5.92E+11	1.61E-01
S XIV	$1s^2 2s-1s^2 2p$	$^2S-^2P^o$	426.607	0	234408	2	6	1.15E+09	9.38E-02
			445.700	0	224366	2	2	1.00E+09	2.99E-02
			417.660	0	239429	2	4	1.22E+09	6.39E-02
S XIV	$1s^2 2s-1s^2 3p$	$^2S-^2P^o$	30.4410	0	3285040	2	6	8.54E+11	3.56E-01
			30.4690	0	3282020	2	2	8.55E+11	1.19E-01
			30.4270	0	3286550	2	4	8.54E+11	2.37E-01
S XIV	$1s^2 2s-1s^2 4p$	$^2S-^2P^o$	23.0084	0	4346230	2	6	3.80E+11	9.04E-02
			23.0151	0	4344980	2	2	3.79E+11	3.01E-02
			23.0051	0	4346860	2	4	3.80E+11	6.03E-02
S XV	$1s^2-1s2p$	$^1S-^1P^o$	5.0387	0	[19846285]	1	3	6.72E+13	7.67E-01
S XV	$1s^2-1s3p$	$^1S-^1P^o$	4.2991	0	[23260416]	1	3	1.84E+13	1.53E-01
S XV	$1s^2-1s4p$	$^1S-^1P^o$	4.0885	0	[24458842]	1	3	7.59E+12	5.71E-02
S XV	$1s^2-1s5p$	$^1S-^1P^o$	3.9978	0	[25014007]	1	3	3.84E+12	2.76E-02
S XV	$1s^2-1s6p$	$^1S-^1P^o$	3.9501	0	[25315693]	1	3	2.19E+12	1.54E-02
S XV	$1s^2-1s7p$	$^1S-^1P^o$	3.9219	0	[25497627]	1	3	1.38E+12	9.57E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
S XV	$1s^2-1s8p$	$1S-1P^o$	3.9039	0	[25615718]	1	3	9.25E+11	6.34E-03
S XV	$1s^2-1s9p$	$1S-1P^o$	3.8916	0	[25696685]	1	3	6.47E+11	4.41E-03
S XV	$1s^2-1s10p$	$1S-1P^o$	3.8828	0	[25754601]	1	3	4.72E+11	3.20E-03
S XVI	$1s-2p$	$2S-2P^o$	4.7292	0	21145360	2	6	4.14E+13	4.16E-01
			4.7328	0	[21129240]	2	2	4.14E+13	1.39E-01
			4.7274	0	[21153430]	2	4	4.13E+13	2.77E-01
S XVI	$1s-3p$	$2S-2P^o$	3.9912	0	25055160	2	6	1.10E+13	7.90E-02
			3.9920	0	[25050380]	2	2	1.10E+13	2.63E-02
			3.9908	0	[25057550]	2	4	1.10E+13	5.27E-02
S XVI	$1s-4p$	$2S-2P^o$	3.7845	0	26423820	2	6	4.50E+12	2.90E-02
			3.7848	0	[26421800]	2	2	4.50E+12	9.67E-03
			3.7843	0	[26424820]	2	4	4.49E+12	1.93E-02
S XVI	$1s-5p$	$2S-2P^o$	3.6959	0	27057180	2	6	2.26E+12	1.39E-02
			3.6960	0	[27056150]	2	2	2.27E+12	4.65E-03
			3.6958	0	[27057700]	2	4	2.27E+12	9.30E-03
S XVI	$1s-6p$	$2S-2P^o$	3.6496	0	27400560	2	6	1.30E+12	7.80E-03
			3.6496	0	[27400560]	2	4	1.30E+12	5.20E-03
			3.6496	0	[27400560]	2	2	1.30E+12	2.60E-03
S XVI	$1s-7p$	$2S-2P^o$	3.6221	0	27608150	2	6	8.17E+11	4.82E-03
			3.6221	0	[27608150]	2	4	8.16E+11	3.21E-03
			3.6221	0	[27608150]	2	2	8.13E+11	1.60E-03
S XVI	$1s-8p$	$2S-2P^o$	3.6045	0	27742840	2	6	5.46E+11	3.19E-03
			3.6045	0	[27742840]	2	4	5.44E+11	2.12E-03
			3.6045	0	[27742840]	2	2	5.44E+11	1.06E-03
S XVI	$1s-9p$	$2S-2P^o$	3.5926	0	27835160	2	6	3.82E+11	2.22E-03
			3.5926	0	[27835160]	2	4	3.82E+11	1.48E-03
			3.5926	0	[27835160]	2	2	3.81E+11	7.38E-04
S XVI	$1s-10p$	$2S-2P^o$	3.5841	0	27901180	2	6	2.77E+11	1.60E-03
			3.5841	0	[27901180]	2	4	2.78E+11	1.07E-03
			3.5841	0	[27901180]	2	2	2.78E+11	5.35E-04
Ar I	$3p^6-3p^5(^2P^o_{3/2})4s$	$1S-\frac{3}{2}\left[\frac{3}{2}\right]^o$	1066.6599	0	93750.5978	1	3	1.30E+08	6.65E-02
Ar I	$3p^6-3p^5(^2P^o_{1/2})4s$	$1S-\frac{1}{2}\left[\frac{1}{2}\right]^o$	1048.2199	0	95399.8276	1	3	4.94E+08	2.44E-01
Ar I	$3p^6-3p^5(^2P^o_{3/2})5s$	$1S-\frac{3}{2}\left[\frac{3}{2}\right]^o$	879.9466	0	113643.260	1	3	7.70E+07	2.68E-02
Ar I	$3p^6-3p^5(^2P^o_{3/2})3d$	$1S-\frac{3}{2}\left[\frac{3}{2}\right]^o$	876.0577	0	114147.732	1	3	2.69E+08	9.30E-02
Ar I	$3p^6-3p^5(^2P^o_{1/2})5s$	$1S-\frac{1}{2}\left[\frac{1}{2}\right]^o$	869.7542	0	114975.019	1	3	3.50E+07	1.19E-02
Ar I	$3p^6-3p^5(^2P^o_{1/2})3d$	$1S-\frac{1}{2}\left[\frac{1}{2}\right]^o$	866.8000	0	115366.866	1	3	3.14E+08	1.06E-01
Ar II	$3s^23p^5-3s3p^6$	$2P^o-2S$	923.8359	477.19	108721.53	6	2	4.22E+08	1.80E-02
			932.0537	1431.58	108721.53	2	2	1.37E+08	1.78E-02
			919.7810	0	108721.53	4	2	2.85E+08	1.81E-02
Ar II	$3s^23p^5-3p^4(^3P)4s$	$2P^o-2P$	724.0884	477.19	138581.8756	6	6	2.76E+09	2.17E-01
			730.9297	1431.58	138243.6442	2	4	4.46E+08	7.15E-02
			725.5485	1431.58	139258.3384	2	2	1.82E+09	1.44E-01
			723.3606	0	138243.6442	4	4	2.31E+09	1.81E-01
			718.0899	0	139258.3384	4	2	9.42E+08	3.64E-02
Ar II	$3s^23p^5-3p^4(^3P)3d$	$2P^o-2P$	690.2642	477.19	145349.2499	6	6	6.24E+06	4.46E-04
			697.9419	1431.58	144709.9813	2	2	4.03E+06	2.94E-04
			693.3019	1431.58	145668.8842	2	4	1.03E+06	1.48E-04
			691.0373	0	144709.9813	4	2	2.07E+06	7.42E-05
			686.4884	0	145668.8842	4	4	5.29E+06	3.74E-04



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar II	$3s^2 3p^5 - 3p^4(^1D)4s$	$^2P^o - ^2D$	674.4164	477.19	148753.5369	6	10	7.81E+08	8.88E-02
			679.4006	1431.58	148620.1411	2	4	6.37E+08	8.81E-02
			672.8563	0	148620.1411	4	4	1.31E+08	8.90E-03
			671.8513	0	148842.4674	4	6	7.90E+08	8.02E-02
Ar II	$3s^2 3p^5 - 3p^4(^3P)3d$	$^2P^o - ^2D$	665.0475	477.19	150842.3837	6	10	7.93E+08	8.76E-02
			670.9455	1431.58	150474.9900	2	4	6.43E+08	8.68E-02
			664.5623	0	150474.9900	4	4	1.32E+08	8.77E-03
			661.8689	0	151087.3128	4	6	8.05E+08	7.93E-02
Ar II	$3s^2 3p^5 - 3p^4(^1S)4s$	$^2P^o - ^2S$	599.4097	477.19	167307.9817	6	2	3.81E+09	6.84E-02
			602.8585	1431.58	167307.9817	2	2	1.25E+09	6.80E-02
			597.7001	0	167307.9817	4	2	2.56E+09	6.86E-02
Ar II	$3s^2 3p^5 - 3p^4(^1D)3d$	$^2P^o - ^2D$	581.2060	477.19	172533.2192	6	10	6.48E+09	5.47E-01
			583.4371	1431.58	172829.6520	2	4	5.34E+09	5.45E-01
			580.2632	0	172335.5973	4	6	6.51E+09	4.93E-01
			578.6044	0	172829.6520	4	4	1.10E+09	5.50E-02
Ar II	$3s^2 3p^5 - 3p^4(^1D)3d$	$^2P^o - ^2P$	574.4824	477.19	174546.9268	6	6	6.22E+09	3.08E-01
			578.1072	1431.58	174409.8892	2	4	1.02E+09	1.02E-01
			576.7365	1431.58	174821.0019	2	2	4.11E+09	2.05E-01
			573.3620	0	174409.8892	4	4	5.21E+09	2.57E-01
			572.0137	0	174821.0019	4	2	2.10E+09	5.15E-02
Ar II	$3s^2 3p^5 - 3p^4(^1S)3d$	$^2P^o - ^2D$	557.8773	477.19	179728.0696	6	10	2.22E+05	1.73E-05
			560.2233	1431.58	179931.8366	2	4	1.84E+05	1.73E-05
			556.8170	0	179592.2250	4	6	2.25E+05	1.57E-05
			555.7660	0	179931.8366	4	4	3.76E+04	1.74E-06
Ar II	$3s^2 3p^5 - 3p^4(^3P)5s$	$^2P^o - ^2P$	546.7819	477.19	183365.4763	6	6	1.08E+09	4.84E-02
			550.4810	1431.58	183090.8926	2	4	1.76E+08	1.60E-02
			547.9961	1431.58	183914.6437	2	2	7.15E+08	3.22E-02
			546.1768	0	183090.8926	4	4	9.03E+08	4.04E-02
			543.7305	0	183914.6437	4	2	3.66E+08	8.11E-03
Ar II	$3s^2 3p^5 - 3p^4(^1D)3d$	$^2P^o - ^2S$	544.6150	477.19	184093.1341	6	2	8.77E+09	1.30E-01
			547.4606	1431.58	184093.1341	2	2	2.87E+09	1.29E-01
			543.2033	0	184093.1341	4	2	5.88E+09	1.30E-01
Ar II	$3s^2 3p^5 - 3p^4(^3P)4d$	$^2P^o - ^2P$	526.6045	477.19	190373.0309	6	6	3.78E+09	1.57E-01
			530.4954	1431.58	189934.6318	2	2	2.46E+09	1.04E-01
			528.6512	1431.58	190592.2305	2	4	6.21E+08	5.20E-02
			526.4969	0	189934.6318	4	2	1.25E+09	2.60E-02
			524.6804	0	190592.2305	4	4	3.17E+09	1.31E-01
Ar II	$3s^2 3p^5 - 3p^4(^3P)4d$	$^2P^o - ^2D$	520.4490	477.19	192618.9750	6	10	5.64E+09	3.82E-01
			522.7925	1431.58	192712.0576	2	4	4.64E+09	3.80E-01
			519.3270	0	192556.9199	4	6	5.69E+09	3.45E-01
			518.9089	0	192712.0576	4	4	9.49E+08	3.83E-02
Ar II	$3s^2 3p^5 - 3p^4(^1D)5s$	$^2P^o - ^2D$	511.8012	477.19	195865.5780	6	10	1.46E+08	9.54E-03
			514.3100	1431.58	195866.8498	2	4	1.20E+08	9.49E-03
			510.5564	0	195864.7301	4	6	1.47E+08	8.60E-03
			510.5509	0	195866.8498	4	4	2.45E+07	9.56E-04
Ar II	$3s^2 3p^5 - 3p^4(^3P)6s$	$^2P^o - ^2P$	502.4574	477.19	199499.0407	6	6	9.17E+08	3.47E-02
			505.0121	1431.58	199446.6278	2	2	6.02E+08	2.30E-02
			504.8117	1431.58	199525.2472	2	4	1.50E+08	1.15E-02
			501.3873	0	199446.6278	4	2	3.08E+08	5.80E-03
			501.1897	0	199525.2472	4	4	7.70E+08	2.90E-02
Ar II	$3s^2 3p^5 - 3p^4(^1D)4d$	$^2P^o - ^2D$	501.6969	477.19	199800.7165	6	10	5.15E+07	3.24E-03
			503.6503	1431.58	199982.0247	2	4	4.25E+07	3.23E-03
			500.8017	0	199679.8443	4	6	5.19E+07	2.93E-03
			500.0449	0	199982.0247	4	4	8.67E+06	3.25E-04
Ar II	$3s^2 3p^5 - 3p^4(^1D)4d$	$^2P^o - ^2P$	500.6201	477.19	200229.4471	6	6	7.93E+07	2.98E-03
			503.5229	1431.58	200032.2870	2	4	1.30E+07	9.85E-04
			502.0277	1431.58	200623.7674	2	2	5.21E+07	1.97E-03
			499.9193	0	200032.2870	4	4	6.65E+07	2.49E-03
			498.4454	0	200623.7674	4	2	2.67E+07	4.98E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$			
Ar II	$3s^2 3p^5 - 3p^4(^3P)5d$	$^2P^o - ^2D$	490.0973	477.19	204518.3062	6	10	3.33E+09	2.00E-01			
			492.6455	1431.58	204417.2985	2	4	2.73E+09	1.99E-01			
			489.1954	0	204417.2985	4	4	5.57E+08	2.00E-02			
			488.7928	0	204585.6446	4	6	3.35E+09	1.80E-01			
Ar II	$3s^2 3p^5 - 3p^4(^3P)5d$	$^2P^o - ^2P$	488.9764	477.19	204986.0335	6	6	3.18E+09	1.14E-01			
			492.4084	1431.58	204515.0521	2	2	2.07E+09	7.54E-02			
			490.7013	1431.58	205221.5242	2	4	5.25E+08	3.79E-02			
			488.9616	0	204515.0521	4	2	1.06E+09	1.90E-02			
Ar II	$3s^2 3p^5 - 3p^4(^1D)4d$	$^2P^o - ^2S$	487.2783	0	205221.5242	4	4	2.68E+09	9.53E-02			
			488.3627	477.19	205243.0504	6	2	7.80E+09	9.30E-02			
			490.6495	1431.58	205243.0504	2	2	2.57E+09	9.26E-02			
			487.2272	0	205243.0504	4	2	5.24E+09	9.32E-02			
Ar II	$3s^2 3p^5 - 3p^4(^3P)7s$	$^2P^o - ^2P$	480.8973	477.19	208421.8109	6	6	2.54E+08	8.79E-03			
			483.5164	1431.58	208249.7980	2	4	4.17E+07	2.92E-03			
			482.3130	1431.58	208765.8368	2	2	1.67E+08	5.84E-03			
			480.1925	0	208249.7980	4	4	2.12E+08	7.33E-03			
Ar II	$3s^2 3p^5 - 3p^4(^3P)6d$	$^2P^o - ^2P$	479.0056	0	208765.8368	4	2	8.55E+07	1.47E-03			
			478.1936	477.19	209597.4974	6	6	1.85E+09	6.35E-02			
			480.3860	1431.58	209597.4974	2	4	3.03E+08	2.10E-02			
			477.1049	0	209597.4974	4	4	1.56E+09	5.31E-02			
Ar II	$3s^2 3p^5 - 3p^4(^3P)6d$	$^2P^o - ^2D$		1431.58		2	2	1.27E+09	4.37E-02			
				0		4	2	6.36E+08	1.09E-02			
			477.6378	477.19	209840.8417	6	10	2.05E+09	1.17E-01			
			480.8110	1431.58	209413.5166	2	4	1.69E+09	1.17E-01			
Ar II	$3s^2 3p^5 - 3p^4(^1D)6s$	$^2P^o - ^2D$	477.5241	0	209413.5166	4	4	3.42E+08	1.17E-02			
			475.9056	0	210125.7251	4	6	2.08E+09	1.06E-01			
			470.6858	477.19	212933.1306	6	10	3.87E+08	2.14E-02			
			472.8115	1431.58	212932.3598	2	4	3.18E+08	2.13E-02			
Ar II	$3s^2 3p^5 - 3p^4(^1D)6s$	$^2P^o - ^2D$	469.6327	0	212932.3598	4	4	6.47E+07	2.14E-03			
			469.6299	0	212933.6444	4	6	3.89E+08	1.93E-02			
			466.8746	477.19	214667.48	6	10	2.06E+08	1.12E-02			
			465.8367	0	214667.48	4	6	2.07E+08	1.01E-02			
Ar II	$3s^2 3p^5 - 3p^4(^1D)5d$	$^2P^o - ^2D$		1431.58		2	4	1.76E+08	1.15E-02			
				0		4	4	3.52E+07	1.15E-03			
			466.0080	477.19	215065.7718	6	2	8.94E+08	9.70E-03			
			468.0899	1431.58	215065.7718	2	2	2.94E+08	9.65E-03			
Ar II	$3s^2 3p^5 - 3p^4(^1S)5s$	$^2P^o - ^2S$	464.9740	0	215065.7718	4	2	6.00E+08	9.72E-03			
			Ar III	$3s^2 3p^4 - 3s3p^5$	$^3P - ^3P^o$	879.0646	545.2	114302.4	9	9	3.32E+08	3.85E-02
				887.4051	1112.1	113800.2	3	5	8.03E+07	1.58E-02		
				883.1800	1570.2	114797.4	1	3	1.09E+08	3.83E-02		
Ar III	$3s^2 3p^4 - 3s3p^5$	$^3P - ^3P^o$	879.6212	1112.1	114797.4	3	3	8.28E+07	9.60E-03			
				878.7331	0	113800.2	5	5	2.49E+08	2.88E-02		
				875.5287	1112.1	115328.8	3	1	3.37E+08	1.29E-02		
				871.0999	0	114797.4	5	3	1.42E+08	9.70E-03		
Ar III	$3s^2 3p^4 - 3p^3(^4S^o)3d^*$	$^3P - ^3D^o$	639.4058	545.2	156940.4	9	15	2.60E+07	2.66E-03			
				643.2568	1570.2	157029.1	1	3	1.42E+07	2.64E-03		
				641.8086	1112.1	156921.8	3	5	1.93E+07	1.99E-03		
				641.3669	1112.1	157029.1	3	3	1.08E+07	6.64E-04		
Ar III	$3s^2 3p^4 - 3p^3(^4S^o)3d^*$	$^3P - ^3D^o$		637.2853	0	156915.6	5	7	2.64E+07	2.25E-03		
				637.2601	0	156921.8	5	5	6.57E+06	4.00E-04		
				636.8246	0	157029.1	5	3	7.32E+05	2.67E-05		
				555.1342	545.2	180681.775	9	3	7.92E+09	1.22E-01		
Ar III	$3s^2 3p^4 - 3p^3(^4S^o)4s$	$^3P - ^3S^o$		558.3112	1570.2	180681.775	1	3	8.63E+08	1.21E-01		
				556.8869	1112.1	180681.775	3	3	2.60E+09	1.21E-01		
				553.4593	0	180681.775	5	3	4.43E+09	1.22E-01		

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)3d^*$	$^3P-^3D^\circ$	533.1474	545.2	188110.568	9	15	4.42E+08	3.14E-02
			538.7842	1570.2	187173.268	1	3	2.38E+08	3.11E-02
			537.4577	1112.1	187173.268	3	3	1.80E+08	7.80E-03
			535.5811	1112.1	187825.181	3	5	3.28E+08	2.35E-02
			534.2643	0	187173.268	5	3	1.22E+07	3.14E-04
			532.4100	0	187825.181	5	5	1.11E+08	4.73E-03
			529.8965	0	188716.115	5	7	4.51E+08	2.66E-02
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)3d^*$	$^3P-^3P^\circ$	530.7544	545.2	188956.2	9	9	8.52E+07	3.60E-03
			534.9041	1570.2	188519.584	1	3	2.78E+07	3.58E-03
			534.6659	1112.1	188144.8	3	1	8.33E+07	1.19E-03
			533.5966	1112.1	188519.584	3	3	2.10E+07	8.96E-04
			531.1566	1112.1	189380.5	3	5	2.13E+07	1.50E-03
			530.4489	0	188519.584	5	3	3.56E+07	9.02E-04
			528.0375	0	189380.5	5	5	6.51E+07	2.72E-03
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)4s$	$^3P-^3D^\circ$	509.9517	545.2	196642.169	9	15	2.89E+09	1.88E-01
			512.7635	1570.2	196591.878	1	3	1.58E+09	1.87E-01
			511.5619	1112.1	196591.878	3	3	1.19E+09	4.67E-02
			511.4976	1112.1	196616.455	3	5	2.14E+09	1.40E-01
			508.6680	0	196591.878	5	3	8.08E+07	1.88E-03
			508.6044	0	196616.455	5	5	7.27E+08	2.82E-02
			508.4347	0	196682.090	5	7	2.91E+09	1.58E-01
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)3d$	$^3P-^3S^\circ$	489.7571	545.2	204728.0	9	3	2.15E+10	2.58E-01
			492.2282	1570.2	204728.0	1	3	2.35E+09	2.56E-01
			491.1208	1112.1	204728.0	3	3	7.11E+09	2.57E-01
			488.4530	0	204728.0	5	3	1.20E+10	2.58E-01
Ar III	$3s^2 3p^4 - 3p^3(^2P^\circ)4s$	$^3P-^3P^\circ$	483.4714	545.2	207382.6	9	9	2.56E+10	8.97E-01
			485.5272	1570.2	207531.9	1	3	8.42E+09	8.93E-01
			485.1487	1112.1	207234.487	3	5	6.33E+09	3.72E-01
			484.4497	1112.1	207531.9	3	3	6.37E+09	2.24E-01
			484.1125	1112.1	207675.673	3	1	2.54E+10	2.98E-01
			482.5452	0	207234.487	5	5	1.93E+10	6.75E-01
			481.8536	0	207531.9	5	3	1.08E+10	2.26E-01
Ar III	$3s^2 3p^4 - 3p^3(^2P^\circ)3d$	$^3P-^3D^\circ$	475.7297	545.2	210748.6	9	15	3.17E+10	1.79E+00
			476.4335	1112.1	211005.0	3	5	2.36E+10	1.34E+00
			476.1981	1570.2	211566.827	1	3	1.76E+10	1.79E+00
			475.7040	0	210214.735	5	7	3.16E+10	1.50E+00
			475.1616	1112.1	211566.827	3	3	1.32E+10	4.47E-01
			473.9224	0	211005.0	5	5	7.99E+09	2.69E-01
			472.6639	0	211566.827	5	3	8.96E+08	1.80E-02
Ar III	$3s^2 3p^4 - 3p^3(^2P^\circ)3d^*$	$^3P-^3P^\circ$	468.1457	545.2	214153.9	9	9	1.08E+10	3.55E-01
			469.9699	1570.2	214349.780	1	3	3.56E+09	3.54E-01
			469.8339	1112.1	213953.256	3	5	2.68E+09	1.48E-01
			468.9603	1112.1	214349.780	3	3	2.69E+09	8.86E-02
			468.4782	1112.1	214569.2	3	1	1.08E+10	1.18E-01
			467.3918	0	213953.256	5	5	8.15E+09	2.67E-01
			466.5272	0	214349.780	5	3	4.55E+09	8.91E-02
Ar III	$3s^2 3p^4 - 3p^3(^4S^\circ)4d$	$^3P-^3D^\circ$	397.2496	545.2	252276.04	9	15	4.18E+09	1.65E-01
			398.8788	1570.2	252272.92	1	3	2.31E+09	1.65E-01
			398.1818	1112.1	252253.69	3	5	3.13E+09	1.24E-01
			398.1513	1112.1	252272.92	3	3	1.73E+09	4.12E-02
			396.4263	0	252253.69	5	5	1.05E+09	2.48E-02
			396.3961	0	252272.92	5	3	1.17E+08	1.66E-03
			396.3640	0	252293.347	5	7	4.22E+09	1.39E-01
Ar III	$3s^2 3p^4 - 3p^3(^4S^\circ)5s$	$^3P-^3S^\circ$	396.7770	545.2	252575.88	9	3	3.01E+09	2.37E-02
			398.3974	1570.2	252575.88	1	3	3.31E+08	2.36E-02
			397.6716	1112.1	252575.88	3	3	1.00E+09	2.37E-02
			395.9206	0	252575.88	5	3	1.69E+09	2.38E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)4d$	$^3P - ^3D^\circ$	372.4982	545.2	269002.811	9	15	1.72E+09	5.96E-02
			373.9566	1570.2	268980.893	1	3	9.43E+08	5.93E-02
			373.3171	1112.1	268980.893	3	3	7.13E+08	1.49E-02
			373.2693	1112.1	269015.163	3	5	1.28E+09	4.46E-02
			371.7736	0	268980.893	5	3	4.80E+07	5.97E-04
			371.7425	0	269003.382	5	7	1.73E+09	5.02E-02
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)4d$	$^3P - ^3P^\circ$	371.7263	0	269015.163	5	5	4.32E+08	8.95E-03
			368.9487	545.2	271585.54	9	9	3.62E+09	7.39E-02
			370.2281	1570.2	271673.948	1	3	1.19E+09	7.36E-02
			369.8249	1112.1	271510.360	3	5	8.98E+08	3.07E-02
			369.6013	1112.1	271673.948	3	3	8.98E+08	1.84E-02
			369.5708	1112.1	271696.22	3	1	3.60E+09	2.46E-02
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)4d$	$^3P - ^3S^\circ$	368.3101	0	271510.360	5	5	2.73E+09	5.55E-02
			368.0883	0	271673.948	5	3	1.52E+09	1.85E-02
			368.2909	545.2	272069.625	9	3	1.87E+09	1.27E-02
			369.6866	1570.2	272069.625	1	3	2.07E+08	1.27E-02
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)5s$	$^3P - ^3D^\circ$	369.0615	1112.1	272069.625	3	3	6.22E+08	1.27E-02
			367.5530	0	272069.625	5	3	1.05E+09	1.28E-02
			368.1051	545.2	272206.74	9	15	6.29E+08	2.13E-02
			369.6070	1570.2	272127.82	1	3	3.45E+08	2.12E-02
			368.9823	1112.1	272127.82	3	3	2.60E+08	5.31E-03
			368.9002	1112.1	272188.16	3	5	4.68E+08	1.59E-02
Ar III	$3s^2 3p^4 - 3p^3(^2D^\circ)5s$	$^3P - ^3D^\circ$	367.4744	0	272127.82	5	3	1.76E+07	2.14E-04
			367.3929	0	272188.16	5	5	1.58E+08	3.20E-03
			367.3043	0	272253.831	5	7	6.32E+08	1.79E-02
			355.2309	545.2	282052.18	9	9	6.18E+08	1.17E-02
			356.5911	1570.2	282003.459	1	3	2.03E+08	1.16E-02
			356.0800	1112.1	281947.88	3	1	6.11E+08	3.87E-03
Ar III	$3s^2 3p^4 - 3p^3(^2P^\circ)4d$	$^3P - ^3P^\circ$	356.0095	1112.1	282003.459	3	3	1.53E+08	2.90E-03
			355.8843	1112.1	282102.275	3	5	1.53E+08	4.84E-03
			354.6056	0	282003.459	5	3	2.58E+08	2.92E-03
			354.4814	0	282102.275	5	5	4.65E+08	8.76E-03
			352.7642	545.2	284020.62	9	15	2.32E+09	7.21E-02
			353.9218	1570.2	284118.51	1	3	1.27E+09	7.18E-02
Ar III	$3s^2 3p^4 - 3p^3(^2P^\circ)4d$	$^3P - ^3D^\circ$	353.3731	1112.1	284099.086	3	5	1.73E+09	5.40E-02
			353.3489	1112.1	284118.51	3	3	9.62E+08	1.80E-02
			352.2086	0	283922.618	5	7	2.33E+09	6.07E-02
			351.9899	0	284099.086	5	5	5.81E+08	1.08E-02
			351.9658	0	284118.51	5	3	6.49E+07	7.23E-04
			350.3831	545.2	285947.03	9	9	3.60E+08	6.62E-03
Ar III	$3s^2 3p^4 - 3p^3(^2P^\circ)5s$	$^3P - ^3P^\circ$	351.7265	1570.2	285882.00	1	3	1.18E+08	6.58E-03
			351.2234	1112.1	285831.20	3	1	3.57E+08	2.20E-03
			351.1607	1112.1	285882.00	3	3	8.92E+07	1.65E-03
			351.0039	1112.1	286009.21	3	5	8.93E+07	2.75E-03
			349.7947	0	285882.00	5	3	1.51E+08	1.66E-03
			349.6391	0	286009.21	5	5	2.71E+08	4.97E-03
Ar IV	$3s^2 3p^3 - 3s3p^4$	$^4S^\circ - ^4P$	846.5366	0	118128.4	4	12	2.40E+08	7.74E-02
			850.5962	0	117564.6	4	6	2.37E+08	3.85E-02
			843.7651	0	118516.4	4	4	2.43E+08	2.59E-02
			840.0277	0	119043.7	4	2	2.46E+08	1.30E-02
Ar IV	$3s^2 3p^3 - 3p^2(^3P)3d$	$^4S^\circ - ^4P$	452.2888	0	221097.6	4	12	3.38E+10	3.11E+00
			452.9271	0	220786.1	4	6	3.38E+10	1.56E+00
			451.8745	0	221300.4	4	4	3.40E+10	1.04E+00
			451.2090	0	221626.8	4	2	3.41E+10	5.21E-01
Ar IV	$3s^2 3p^3 - 3p^2(^3P)4s$	$^4S^\circ - ^4P$	397.8999	0	251319.5	4	12	1.71E+09	1.22E-01
			399.6569	0	250214.6	4	2	1.70E+09	2.03E-02
			398.5629	0	250901.4	4	4	1.71E+09	4.07E-02
			396.8782	0	251966.5	4	6	1.73E+09	6.13E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar V	$3s^23p^2-3s3p^3$	$^3P-^3D^o$	830.919	1381.7	121730.4	9	15	2.48E+08	4.28E-02
			836.101	2029.2	121632	5	3	6.77E+06	4.26E-04
			835.779	2029.2	121678	5	5	6.10E+07	6.39E-03
			834.858	2029.2	121810	5	7	2.45E+08	3.58E-02
			827.343	763.2	121632	3	3	1.05E+08	1.08E-02
			827.029	763.2	121678	3	5	1.89E+08	3.23E-02
Ar V	$3s^23p^2-3s3p^3$	$^3P-^3P^o$	822.152	0	121632	1	3	1.42E+08	4.33E-02
			712.320	1381.7	141768	9	9	7.98E+08	6.07E-02
			715.641	2029.2	141764	5	5	5.90E+08	4.53E-02
			715.595	2029.2	141773	5	3	3.28E+08	1.51E-02
			709.216	763.2	141764	3	5	2.01E+08	2.53E-02
			709.171	763.2	141773	3	3	2.02E+08	1.52E-02
Ar V	$3s^23p^2-3s3p^3$	$^3P-^3S^o$	709.171	763.2	141773	3	1	8.08E+08	2.03E-02
			705.353	0	141773	1	3	2.73E+08	6.12E-02
			525.886	1381.7	191537	9	3	2.19E+10	3.02E-01
			527.683	2029.2	191537	5	3	1.20E+10	3.01E-01
			524.181	763.2	191537	3	3	7.36E+09	3.03E-01
			522.092	0	191537	1	3	2.49E+09	3.05E-01
Ar V	$3s^23p^2-3s^23p3d$	$^3P-^3P^o$	461.786	1381.7	217932	9	9	1.80E+10	5.74E-01
			463.932	2029.2	217578	5	5	1.33E+10	4.29E-01
			462.413	2029.2	218286	5	3	7.49E+09	1.44E-01
			461.223	763.2	217578	3	5	4.52E+09	2.40E-01
			459.722	763.2	218286	3	3	4.58E+09	1.45E-01
			458.971	763.2	218642	3	1	1.83E+10	1.93E-01
Ar V	$3s^23p^2-3s^23p3d$	$^3P-^3D^o$	458.115	0	218286	1	3	6.13E+09	5.79E-01
			448.100	1381.7	224546	9	15	2.77E+10	1.39E+00
			450.072	2029.2	224216	5	3	7.57E+08	1.38E-02
			449.487	2029.2	224505	5	5	6.87E+09	2.08E-01
			449.059	2029.2	224717	5	7	2.76E+10	1.17E+00
			447.522	763.2	224216	3	3	1.16E+10	3.48E-01
Ar V	$3s^23p^2-3s^23p4s$	$^3P-^3P^o$	446.944	763.2	224505	3	5	2.10E+10	1.05E+00
			445.999	0	224216	1	3	1.56E+10	1.40E+00
			338.153	1381.7	297106	9	9	8.28E+09	1.42E-01
			339.882	2029.2	296249	5	3	3.40E+09	3.53E-02
			339.007	763.2	295742	3	1	8.20E+09	4.71E-02
			338.426	763.2	296249	3	3	2.07E+09	3.55E-02
Ar V	$3s^23p^2-3s^23p4s$	$^3P-^3P^o$	337.993	2029.2	297893	5	5	6.25E+09	1.07E-01
			337.554	0	296249	1	3	2.77E+09	1.42E-01
			336.553	763.2	297893	3	5	2.10E+09	5.94E-02
			763.0232	1471.4	132529.0	6	10	4.54E+08	6.61E-02
			767.7290	2207.1	132461.4	4	4	7.43E+07	6.57E-03
			767.0653	2207.1	132574.1	4	6	4.47E+08	5.92E-02
Ar VI	$3s^23p-3s3p^2$	$^2P^o-^2D$	754.9369	0	132461.4	2	4	3.91E+08	6.68E-02
			594.0631	1471.4	169803.7	6	2	4.90E+09	8.65E-02
			596.6708	2207.1	169803.7	4	2	3.23E+09	8.62E-02
			588.9153	0	169803.7	2	2	1.68E+09	8.73E-02
			550.5404	1471.4	183111.1	6	6	1.43E+10	6.48E-01
			555.6358	2207.1	182181.1	4	2	4.62E+09	1.07E-01
Ar VI	$3s^23p-3s3p^2$	$^2P^o-^2P$	551.3621	2207.1	183576.1	4	4	1.18E+10	5.39E-01
			548.9044	0	182181.1	2	2	9.59E+09	4.33E-01
			544.7332	0	183576.1	2	4	2.45E+09	2.18E-01
			460.4953	1471.4	218628.9	6	10	1.77E+10	9.36E-01
			462.1373	2207.1	218593.0	4	4	2.91E+09	9.33E-02
			462.0096	2207.1	218652.8	4	6	1.75E+10	8.40E-01
Ar VI	$3s^23p-3s^23d$	$^2P^o-^2D$	457.4712	0	218593.0	2	4	1.50E+10	9.42E-01
			293.4002	1471.4	342302.8	6	2	1.92E+10	8.24E-02
			294.0349	2207.1	342302.8	4	2	1.27E+10	8.22E-02
			292.1390	0	342302.8	2	2	6.46E+09	8.27E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar VI	$3s^2 3p-3s^2 4d$	$^2P^o-^2D$	220.6015	1471.4	454777.5	6	10	3.68E+09	4.48E-02
			220.9757	2207.1	454745.6	4	4	6.11E+08	4.47E-03
			220.9497	2207.1	454798.8	4	6	3.66E+09	4.02E-02
			219.9032	0	454745.6	2	4	3.10E+09	4.49E-02
Ar VI	$3s^2 3p-3s^2 5d$	$^2P^o-^2D$	180.508	1471.4	555465	6	10	4.95E+09	4.03E-02
			180.792	2207.1	555330	4	4	8.20E+08	4.02E-03
			180.718	2207.1	555555	4	6	4.93E+09	3.62E-02
			180.073	0	555330	2	4	4.16E+09	4.04E-02
Ar VII	$3s^2-3s3p$	$^1S-^1P^o$	585.754	0	170720	1	3	8.04E+09	1.24E+00
Ar VII	$3s^2-3s4p$	$^1S-^1P^o$	176.566	0	566362	1	3	1.28E+10	1.79E-01
Ar VIII	$2p^6 3s-2p^6 3p$	$^2S-^2P^o$	704.71	0	141903	2	6	2.57E+09	5.73E-01
			713.81	0	140093	2	2	2.46E+09	1.88E-01
			700.24	0	142808	2	4	2.62E+09	3.85E-01
Ar VIII	$2p^6 3s-2p^6 4p$	$^2S-^2P^o$	159.007	0	628905	2	6	1.09E+10	1.24E-01
			159.175	0	628240	2	2	1.09E+10	4.14E-02
			158.923	0	629237	2	4	1.09E+10	8.29E-02
Ar VIII	$2p^6 3s-2p^6 5p$	$^2S-^2P^o$	120.114	0	832542	2	6	6.75E+09	4.38E-02
			120.157	0	832245	2	2	6.74E+09	1.46E-02
			120.093	0	832691	2	4	6.75E+09	2.92E-02
Ar IX	$2s^2 2p^6-2p^5 3s$	$^1S-^1P^o$	48.7389	0	2051750	1	3	2.23E+11	2.38E-01
Ar IX	$2s^2 2p^6-2p^5 3d$	$^1S-^1P^o$	41.4760	0	2411030	1	3	2.60E+12	2.01E+00
Ar IX	$2s^2 2p^6-2p^5 4s$	$^1S-^1P^o$	36.9829	0	2703950	1	3	8.31E+10	5.11E-02
Ar IX	$2s^2 2p^6-2p^6 3p$	$^1S-^1P^o$	35.8340	0	2790645	1	3	5.77E+11	3.33E-01
Ar IX	$2s^2 2p^6-2p^5 4d$	$^1S-^1P^o$	35.0239	0	2855190	1	3	9.50E+11	5.24E-01
Ar IX	$2s^2 2p^6-2p^5 5d$	$^1S-^1P^o$	32.6670	0	3061190	1	3	5.79E+11	2.78E-01
Ar IX	$2s^2 2p^6-2p^5 6d$	$^1S-^1P^o$	31.5120	0	3173390	1	3	3.43E+11	1.53E-01
Ar X	$2s^2 2p^5-2s2p^6$	$^2P^o-^2S$	167.196	6019	604120	6	2	4.75E+10	6.63E-02
			170.630	18057	604120	2	2	1.49E+10	6.50E-02
			165.530	0	604120	4	2	3.26E+10	6.70E-02
Ar X	$2s^2 2p^5-2p^4(^3P)3s$	$^2P^o-^2P$	43.9612	6019	2280754	6	6	3.76E+11	1.09E-01
			44.2711	18057	2276867	2	4	6.13E+10	3.60E-02
			44.0437	18057	2288527	2	2	2.49E+11	7.23E-02
			43.9200	0	2276867	4	4	3.14E+11	9.07E-02
			43.6962	0	2288527	4	2	1.27E+11	1.82E-02
Ar X	$2s^2 2p^5-2p^4(^1D)3s$	$^2P^o-^2D$	43.0491	6019	2328949	6	10	1.46E+11	6.76E-02
			43.2700	18057	2329127	2	4	1.20E+11	6.72E-02
			42.9400	0	2328831	4	6	1.47E+11	6.09E-02
			42.9345	0	2329127	4	4	2.45E+10	6.77E-03
Ar X	$2s^2 2p^5-2p^4(^1S)3s$	$^2P^o-^2S$	41.6771	6019	2405420	6	2	1.46E+11	1.27E-02
			41.8872	18057	2405420	2	2	4.79E+10	1.26E-02
			41.5728	0	2405420	4	2	9.80E+10	1.27E-02
Ar X	$2s^2 2p^5-2p^4(^3P)3d$	$^2P^o-^2D$	38.375	6019	2611850	6	10	1.10E+12	4.05E-01
			38.641	18057	[2606000]	2	4	9.00E+11	4.03E-01
			38.373	0	[2606000]	4	4	1.83E+11	4.05E-02
			38.2300	0	2615747	4	6	1.12E+12	3.67E-01
Ar X	$2s^2 2p^5-2p^4(^3P)3d$	$^2P^o-^2P$	38.3730	6019	2612018	6	6	2.41E+11	5.31E-02
			38.6961	18057	[2602298]	2	2	1.56E+11	3.51E-02
			38.4790	18057	[2616878]	2	4	3.99E+10	1.77E-02
			38.4276	0	[2602298]	4	2	7.99E+10	8.84E-03
			38.2135	0	[2616878]	4	4	2.03E+11	4.45E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar X	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2S$	37.7081	6019	2657966	6	2	2.29E+12	1.63E-01
			37.8801	18057	[2657966]	2	2	7.53E+11	1.62E-01
			37.6228	0	[2657966]	4	2	1.55E+12	1.64E-01
Ar X	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2P$	37.5310	6019	2670486	6	6	2.68E+12	5.67E-01
			37.7325	18057	[2668291]	2	4	4.40E+11	1.88E-01
			37.6390	18057	[2674877]	2	2	1.77E+12	3.77E-01
			37.4772	0	[2668291]	4	4	2.24E+12	4.72E-01
			37.3849	0	[2674877]	4	2	9.04E+11	9.47E-02
Ar X	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2D$	37.4809	6019	2674045	6	10	2.06E+12	7.24E-01
			37.6000	18057	2677631	2	4	1.70E+12	7.21E-01
			37.4300	0	2671654	4	6	2.07E+12	6.52E-01
			37.3464	0	2677631	4	4	3.47E+11	7.26E-02
Ar X	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^\circ - ^2D$	36.6315	6019	2735908	6	10	4.47E+11	1.50E-01
			36.7800	18057	2736926	2	4	3.67E+11	1.49E-01
			36.5600	0	2735230	4	6	4.49E+11	1.35E-01
			36.5373	0	2736926	4	4	7.49E+10	1.50E-02
Ar X	$2s^2 2p^5 - 2p^5(^3P^\circ)3p$	$^2P^\circ - ^2D$	32.675	6019	3066500	6	10	4.54E+11	1.21E-01
			32.610	0	3066500	4	6	4.60E+11	1.10E-01
				18057		2	4	3.65E+11	1.17E-01
				0		4	4	7.37E+10	1.18E-02
Ar X	$2s^2 2p^5 - 2p^4(^3P)4s$	$^2P^\circ - ^2P$	32.614	6019	3072200	6	6	7.34E+10	1.17E-02
			32.742	18057	3072200	2	2	4.84E+10	7.78E-03
			32.742	18057	3072200	2	4	1.21E+10	3.89E-03
			32.550	0	3072200	4	4	6.16E+10	9.79E-03
			32.550	0	3072200	4	2	2.47E+10	1.96E-03
Ar X	$2s^2 2p^5 - 2p^5(^3P^\circ)3p$	$^2P^\circ - ^2S$	32.513	6019	3081700	6	2	6.42E+11	3.39E-02
			32.641	18057	3081700	2	2	2.12E+11	3.38E-02
			32.450	0	3081700	4	2	4.31E+11	3.40E-02
Ar X	$2s^2 2p^5 - 2p^4(^1D)4d$	$^2P^\circ - ^2D$	30.996	6019	3232240	6	10	4.33E+11	1.04E-01
			31.080	18057	3235600	2	4	3.59E+11	1.04E-01
			30.960	0	3230000	4	6	4.37E+11	9.42E-02
			30.906	0	3235600	4	4	7.33E+10	1.05E-02
Ar X	$2s^2 2p^5 - 2p^4(^1D)5d$	$^2P^\circ - ^2D$	29.131	6019	3438840	6	10	1.59E+11	3.38E-02
			29.197	18057	3443100	2	4	1.32E+11	3.37E-02
			29.104	0	3436000	4	6	1.60E+11	3.04E-02
			29.044	0	3443100	4	4	2.68E+10	3.39E-03
Ar XI	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	189.02	6849	535890	9	9	2.15E+10	1.15E-01
			194.11	14456	529630	3	5	4.98E+09	4.69E-02
			190.95	18274	541960	1	3	6.95E+09	1.14E-01
			189.57	14456	541960	3	3	5.35E+09	2.88E-02
			188.81	0	529630	5	5	1.62E+10	8.68E-02
			187.08	14456	548990	3	1	2.22E+10	3.89E-02
			184.52	0	541960	5	3	9.66E+09	2.96E-02
Ar XI	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	39.826	6849	2517800	9	3	5.50E+11	4.36E-02
			40.008	18274	2517800	1	3	6.03E+10	4.34E-02
			39.947	14456	2517800	3	3	1.82E+11	4.35E-02
			39.717	0	2517800	5	3	3.09E+11	4.38E-02
Ar XI	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	38.708	6849	2590300	9	15	1.78E+11	6.65E-02
			38.900	18274	2589000	1	3	9.73E+10	6.62E-02
			38.842	14456	2589000	3	3	7.34E+10	1.66E-02
			38.789	14456	2592500	3	5	1.32E+11	4.98E-02
			38.625	0	2589000	5	3	4.97E+09	6.67E-04
			38.620	0	2589300	5	7	1.79E+11	5.60E-02
			38.573	0	2592500	5	5	4.48E+10	1.00E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar XI	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P - ^3P^\circ$	37.908	6849	2644800	9	9	1.75E+11	3.77E-02
			38.018	14456	2644800	3	5	4.32E+10	1.56E-02
			37.810	0	2644800	5	5	1.32E+11	2.83E-02
				14456		3	3	4.38E+10	9.44E-03
				0		5	3	7.31E+10	9.45E-03
				14456		3	1	1.75E+11	1.26E-02
Ar XI	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P - ^3D^\circ$	35.485	6849	2825000	9	15	8.07E+11	2.54E-01
			35.700	18274	2819400	1	3	4.40E+11	2.52E-01
			35.651	14456	2819400	3	3	3.32E+11	6.33E-02
			35.580	14456	2825000	3	5	6.01E+11	1.90E-01
			35.469	0	2819400	5	3	2.24E+10	2.54E-03
			35.398	0	2825000	5	5	2.04E+11	3.83E-02
Ar XI	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3D^\circ$	35.369	0	2827300	5	7	8.19E+11	2.15E-01
			34.420	6849	2912100	9	15	1.69E+12	4.99E-01
			34.561	18274	2911700	1	3	9.25E+11	4.97E-01
			34.520	14456	2911300	3	5	1.25E+12	3.73E-01
			34.516	14456	2911700	3	3	7.00E+11	1.25E-01
			34.349	0	2911300	5	5	4.24E+11	7.50E-02
Ar XI	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3P^\circ$	34.344	0	2911700	5	3	4.72E+10	5.01E-03
			34.330	0	2912900	5	7	1.70E+12	4.20E-01
			34.320	6849	2920600	9	9	2.70E+12	4.77E-01
			34.410	14456	2920600	3	5	6.69E+11	1.98E-01
			34.240	0	2920600	5	5	2.04E+12	3.59E-01
				14456		3	3	6.74E+11	1.19E-01
Ar XI	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3S^\circ$		0		5	3	1.12E+12	1.19E-01
				14456		3	1	2.70E+12	1.59E-01
				18274		1	3	9.00E+11	4.77E-01
			34.179	6849	2932600	9	3	2.76E+12	1.61E-01
			34.313	18274	2932600	1	3	3.02E+11	1.60E-01
			34.268	14456	2932600	3	3	9.14E+11	1.61E-01
Ar XI	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3D^\circ$	34.099	0	2932600	5	3	1.54E+12	1.61E-01
			33.720	6849	2972500	9	15	1.72E+12	4.90E-01
			33.840	14456	2969500	3	5	1.28E+12	3.66E-01
			33.775	18274	2979000	1	3	9.53E+11	4.89E-01
			33.732	14456	2979000	3	3	7.15E+11	1.22E-01
			33.676	0	2969500	5	5	4.32E+11	7.35E-02
Ar XII	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$	33.650	0	2971800	5	7	1.74E+12	4.13E-01
			33.568	0	2979000	5	3	4.85E+10	4.92E-03
			220.745	0	453011	4	12	6.62E+09	1.45E-01
			224.250	0	445931	4	6	6.27E+09	7.09E-02
			218.290	0	458106	4	4	6.79E+09	4.85E-02
			215.490	0	464059	4	2	7.07E+09	2.46E-02
Ar XII	$2s^2 2p^3 - 2p^2(^3P)3s$	$^4S^\circ - ^4P$	34.742	0	2878400	4	12	2.03E+11	1.10E-01
			34.880	0	2867000	4	2	2.00E+11	1.82E-02
			34.780	0	2875200	4	4	2.02E+11	3.66E-02
			34.670	0	2884300	4	6	2.03E+11	5.50E-02
Ar XII	$2s^2 2p^3 - 2p^2(^3P)3d$	$^4S^\circ - ^4P$	31.372	0	3187520	4	12	3.93E+12	1.74E+00
			31.389	0	3185800	4	6	3.92E+12	8.68E-01
			31.347	0	3190100	4	4	3.93E+12	5.79E-01
				0		4	2	3.93E+12	2.90E-01
Ar XII	$2s^2 2p^3 - 2p^3(^5S^\circ)3p$	$^4S^\circ - ^4P$	30.580	0	3270100	4	12	5.82E+11	2.45E-01
			30.580	0	3270100	4	6	5.85E+11	1.23E-01
				0		4	4	5.78E+11	8.11E-02
				0		4	2	5.78E+11	4.05E-02
Ar XII	$2s^2 2p^3 - 2p^2(^3P)4d$	$^4S^\circ - ^4P$	25.040	0	3993600	4	12	1.35E+12	3.82E-01
			25.040	0	3993600	4	6	1.35E+12	1.91E-01
				0		4	4	1.35E+12	1.27E-01
				0		4	2	1.36E+12	6.38E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar XIII	$2s^2 2p^2 - 2s 2p^3$	$^3P - ^3D^o$	245.12	15444	423410	9	15	3.72E+09	5.58E-02
			249.48	21893	422720	5	5	8.82E+08	8.23E-03
			249.16	21893	423240	5	3	9.83E+07	5.49E-04
			248.71	21893	423970	5	7	3.56E+09	4.62E-02
			242.20	9845	422720	3	5	2.89E+09	4.24E-02
			241.90	9845	423240	3	3	1.61E+09	1.41E-02
			236.27	0	423240	1	3	2.31E+09	5.79E-02
Ar XIII	$2s^2 2p^2 - 2s 2p^3$	$^3P - ^3P^o$	207.895	15444	496456	9	9	9.60E+09	6.22E-02
			211.006	21893	495814	5	3	3.82E+09	1.53E-02
			210.461	21893	497040	5	5	6.94E+09	4.61E-02
			205.924	9845	495460	3	1	9.86E+09	2.09E-02
			205.774	9845	495814	3	3	2.47E+09	1.57E-02
			205.257	9845	497040	3	5	2.49E+09	2.62E-02
			201.689	0	495814	1	3	3.50E+09	6.40E-02
Ar XIII	$2s^2 2p^2 - 2s 2p^3$	$^3P - ^3S^o$	163.09	15444	628620	9	3	5.40E+10	7.18E-02
			164.82	21893	628620	5	3	2.91E+10	7.10E-02
			161.61	9845	628620	3	3	1.85E+10	7.24E-02
			159.08	0	628620	1	3	6.47E+09	7.36E-02
Ar XIII	$2s^2 2p^2 - 2s^2 2p 3s$	$^3P - ^3P^o$	31.799	15444	3160200	9	9	4.02E+11	6.09E-02
			31.864	21893	3160200	5	5	2.99E+11	4.55E-02
			31.742	9845	3160200	3	5	1.01E+11	2.54E-02
				9845		3	3	1.00E+11	1.52E-02
				21893		5	3	1.67E+11	1.52E-02
				9845		3	1	4.00E+11	2.02E-02
Ar XIII	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3D^o$		0		1	3	1.33E+11	6.07E-02
			29.370	15444	3420260	9	15	4.21E+12	9.08E-01
			29.510	21893	3410600	5	3	1.15E+11	9.03E-03
			29.454	21893	3417050	5	5	1.05E+12	1.36E-01
			29.405	9845	3410600	3	3	1.74E+12	2.26E-01
			29.370	21893	3426700	5	7	4.21E+12	7.62E-01
			29.350	9845	3417050	3	5	3.16E+12	6.81E-01
Ar XIII	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3P^o$	29.320	0	3410600	1	3	2.35E+12	9.08E-01
			29.257	15444	3433400	9	9	2.33E+12	2.99E-01
			29.320	21893	3432500	5	5	1.73E+12	2.23E-01
			29.305	21893	3434300	5	3	9.67E+11	7.47E-02
			29.217	9845	3432500	3	5	5.86E+11	1.25E-01
			29.202	9845	3434300	3	3	5.85E+11	7.48E-02
			29.191	9845	3435600	3	1	2.34E+12	9.98E-02
Ar XIII	$2s^2 2p^2 - 2s^2 2p 3d$	$^3P - ^3D^o$	29.118	0	3434300	1	3	7.89E+11	3.01E-01
			27.559	15444	3644000	9	15	1.05E+12	1.99E-01
			27.608	21893	3644000	5	7	1.04E+12	1.66E-01
			27.608	21893	3644000	5	5	2.61E+11	2.98E-02
			27.608	21893	3644000	5	3	2.90E+10	1.99E-03
			27.517	9845	3644000	3	5	7.88E+11	1.49E-01
			27.517	9845	3644000	3	3	4.40E+11	4.99E-02
Ar XIII	$2s^2 2p^2 - 2s 2p^2(^4P)3p$	$^3P - ^3D^o$	27.442	0	3644000	1	3	5.90E+11	2.00E-01
			26.485	15444	3791200	9	9	1.16E+12	1.22E-01
			26.530	21893	3791200	5	5	8.70E+11	9.18E-02
			26.446	9845	3791200	3	5	2.93E+11	5.12E-02
				9845		3	3	2.72E+11	2.86E-02
				21893		5	3	4.53E+11	2.86E-02
				9845		3	1	1.09E+12	3.81E-02
Ar XIII	$2s^2 2p^2 - 2s 2p^2(^4P)3p$	$^3P - ^3P^o$		0		1	3	3.61E+11	1.14E-01
			26.315	15444	3815500	9	3	1.37E+12	4.74E-02
			26.360	21893	3815500	5	3	7.57E+11	4.73E-02
			26.277	9845	3815500	3	3	4.59E+11	4.75E-02
Ar XIII	$2s^2 2p^2 - 2s 2p^2(^4P)3p$	$^3P - ^3S^o$	26.209	0	3815500	1	3	1.54E+11	4.76E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar XIII	$2s^2 2p^2 - 2s^2 2p4s$	$^3P - ^3P^o$	23.601	15444	4252600	9	9	1.17E+11	9.81E-03
			23.637	21893	4252600	5	5	8.77E+10	7.35E-03
			23.570	9845	4252600	3	5	2.95E+10	4.10E-03
				9845		3	3	2.93E+10	2.45E-03
				21893		5	3	4.89E+10	2.45E-03
				9845		3	1	1.17E+11	3.27E-03
				0		1	3	3.92E+10	9.81E-03
Ar XIII	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3P^o$	23.00	15444	4364000	9	9	7.78E+11	6.17E-02
			23.03	21893	4364000	5	5	5.81E+11	4.62E-02
			22.97	9845	4364000	3	5	1.96E+11	2.58E-02
				9845		3	3	1.94E+11	1.54E-02
				21893		5	3	3.24E+11	1.54E-02
				9845		3	1	7.76E+11	2.05E-02
				0		1	3	2.59E+11	6.15E-02
Ar XIV	$2s^2 2p - 2s^2 2p^2$	$^2P^o - ^2D$	252.701	15105	410829	6	10	3.24E+09	5.17E-02
			257.987	22657	410273	4	4	5.07E+08	5.06E-03
			257.372	22657	411200	4	6	3.07E+09	4.57E-02
			243.740	0	410273	2	4	3.01E+09	5.36E-02
Ar XIV	$2s^2 2p - 2s^2 2p^2$	$^2P^o - ^2S$	200.27	15105	514430	6	2	1.32E+10	2.64E-02
			203.35	22657	514430	4	2	8.39E+09	2.60E-02
			194.39	0	514430	2	2	4.80E+09	2.72E-02
Ar XIV	$2s^2 2p - 2s^2 2p^2$	$^2P^o - ^2P$	186.42	15105	551520	6	6	2.53E+10	1.32E-01
			191.36	22657	545230	4	2	7.80E+09	2.14E-02
			187.97	22657	554660	4	4	2.06E+10	1.09E-01
			183.41	0	545230	2	2	1.77E+10	8.94E-02
			180.29	0	554660	2	4	4.66E+09	4.54E-02
Ar XIV	$2s^2 2p - 2s^2 3s$	$^2P^o - ^2S$	29.423	15105	3413800	6	2	5.13E+11	2.22E-02
			29.489	22657	3413800	4	2	3.39E+11	2.21E-02
			29.293	0	3413800	2	2	1.73E+11	2.23E-02
Ar XIV	$2s^2 2p - 2s^2 3d$	$^2P^o - ^2D$	27.577	15105	3641300	6	10	3.43E+12	6.52E-01
			27.642	22657	3640300	4	4	5.67E+11	6.50E-02
			27.629	22657	3642000	4	6	3.41E+12	5.85E-01
			27.470	0	3640300	2	4	2.89E+12	6.54E-01
Ar XIV	$2s^2 2p - 2s^2 3p(^3P^o)3p$	$^2P^o - ^2P$	25.518	15105	3933900	6	6	1.57E+12	1.53E-01
			25.567	22657	3933900	4	4	1.30E+12	1.27E-01
			25.420	0	3933900	2	4	2.63E+11	5.10E-02
				0		2	2	9.91E+11	9.67E-02
				22657		4	2	4.96E+11	2.42E-02
Ar XIV	$2s^2 2p - 2s^2 4d$	$^2P^o - ^2D$	21.113	15105	4751500	6	10	1.13E+12	1.26E-01
			21.147	22657	4751500	4	6	1.13E+12	1.14E-01
				0		2	4	9.35E+11	1.25E-01
				22657		4	4	1.87E+11	1.25E-02
Ar XV	$2s^2 - 2s2p$	$^1S - ^1P^o$	221.15	0	452180	1	3	9.32E+09	2.05E-01
Ar XV	$2s^2 - 2s3p$	$^1S - ^1P^o$	24.737	0	4042600	1	3	2.31E+12	6.36E-01
Ar XV	$2s^2 - 2p3d$	$^1S - ^1P^o$	22.373	0	4469600	1	3	1.47E+11	3.31E-02
Ar XV	$2s^2 - 2s4p$	$^1S - ^1P^o$	18.818	0	5314200	1	3	1.04E+12	1.66E-01
Ar XVI	$1s^2 2s - 1s^2 2p$	$^2S - ^2P^o$	364.93	0	274030	2	6	1.41E+09	8.42E-02
			389.14	0	256980	2	2	1.16E+09	2.63E-02
			353.92	0	282550	2	4	1.54E+09	5.79E-02
Ar XVII	$1s^2 - 1s2p$	$^1S - ^1P^o$	3.9488	0	25323950	1	3	1.11E+14	7.75E-01
Ar XVII	$1s^2 - 1s3p$	$^1S - ^1P^o$	3.3654	0	29713740	1	3	3.04E+13	1.55E-01
Ar XVII	$1s^2 - 1s4p$	$^1S - ^1P^o$	3.1996	0	31254280	1	3	1.24E+13	5.73E-02
Ar XVII	$1s^2 - 1s5p$	$^1S - ^1P^o$	3.1281	0	31967860	1	3	6.27E+12	2.76E-02
Ar XVII	$1s^2 - 1s6p$	$^1S - ^1P^o$	3.0950	0	32310000	1	3	3.60E+12	1.55E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ar XVIII	$1s-2p$	$^2S-^2P^o$	3.7329	0	26788680	2	6	6.64E+13	4.16E-01
			3.7365	0	[26762780]	2	2	6.64E+13	1.39E-01
			3.7311	0	[26801620]	2	4	6.64E+13	2.77E-01
Ar XVIII	$1s-3p$	$^2S-^2P^o$	3.1506	0	31739780	2	6	1.77E+13	7.90E-02
			3.1514	0	[31732100]	2	2	1.77E+13	2.63E-02
			3.1502	0	[31743610]	2	4	1.77E+13	5.27E-02
Ar XVIII	$1s-4p$	$^2S-^2P^o$	2.9875	0	33473020	2	6	7.22E+12	2.90E-02
			2.9878	0	[33469780]	2	2	7.23E+12	9.67E-03
			2.9873	0	[33474630]	2	4	7.21E+12	1.93E-02
Ar XVIII	$1s-5p$	$^2S-^2P^o$	2.9176	0	34275060	2	6	3.63E+12	1.39E-02
			2.9177	0	[34273400]	2	2	3.64E+12	4.65E-03
			2.9175	0	[34275890]	2	4	3.64E+12	9.30E-03
Ar XVIII	$1s-6p$	$^2S-^2P^o$	2.8810	0	34709660	2	6	2.09E+12	7.80E-03
			2.8810	0	[34709660]	2	4	2.09E+12	5.20E-03
			2.8810	0	[34709660]	2	2	2.09E+12	2.60E-03
Ar XVIII	$1s-7p$	$^2S-^2P^o$	2.8594	0	34972570	2	6	1.31E+12	4.82E-03
			2.8594	0	[34972570]	2	4	1.31E+12	3.21E-03
			2.8594	0	[34972570]	2	2	1.31E+12	1.60E-03
Ar XVIII	$1s-8p$	$^2S-^2P^o$	2.8455	0	35143150	2	6	8.76E+11	3.19E-03
			2.8455	0	[35143150]	2	4	8.73E+11	2.12E-03
			2.8455	0	[35143150]	2	2	8.73E+11	1.06E-03
Ar XVIII	$1s-9p$	$^2S-^2P^o$	2.8361	0	35260060	2	6	6.14E+11	2.22E-03
			2.8361	0	[35260060]	2	4	6.14E+11	1.48E-03
			2.8361	0	[35260060]	2	2	6.12E+11	7.38E-04
Ar XVIII	$1s-10p$	$^2S-^2P^o$	2.8294	0	35343670	2	6	4.44E+11	1.60E-03
			2.8294	0	[35343670]	2	4	4.46E+11	1.07E-03
			2.8294	0	[35343670]	2	2	4.46E+11	5.35E-04
Ca I	$3p^6 4s^2-3p^6 4s4p$	$^1S-^1P^o$	4227.9179	0	23652.304	1	3	2.41E+08	1.94E+00
Ca I	$3p^6 4s^2-3p^6 3d4p$	$^1S-^1P^o$	2722.4504	0	36731.615	1	3	6.03E+06	2.01E-02
Ca I	$3p^6 4s^2-3p^6 4s5p$	$^1S-^1P^o$	2399.2893	0	41679.008	1	3	5.95E+05	1.54E-03
Ca I	$3p^6 4s^2-3p^6 4s6p$	$^1S-^1P^o$	2276.1686	0	43933.477	1	3	4.63E+06	1.08E-02
Ca I	$3p^6 4s^2-3p^6 4s7p$	$^1S-^1P^o$	2201.4136	0	45425.358	1	3	8.63E+06	1.88E-02
Ca I	$3p^6 4s^2-3p^6 4s8p$	$^1S-^1P^o$	2151.4717	0	46479.813	1	3	9.75E+06	2.03E-02
Ca I	$3p^6 4s^2-3p^6 4s9p$	$^1S-^1P^o$	2119.3459	0	47184.370	1	3	7.62E+06	1.54E-02
Ca I	$3p^6 4s^2-3p^6 4s10p$	$^1S-^1P^o$	2098.103	0	47662.10	1	3	5.04E+06	9.97E-03
Ca I	$3p^6 4s^2-3p^6 4s11p$	$^1S-^1P^o$	2083.442	0	47997.49	1	3	3.20E+06	6.24E-03
Ca II	$3p^6 4s-3p^6 4p$	$^2S-^2P^o$	3946.314	0	25340.10	2	6	1.39E+08	9.72E-01
			3969.591	0	25191.51	2	2	1.36E+08	3.22E-01
			3934.777	0	25414.40	2	4	1.40E+08	6.50E-01
Ca II	$3p^6 4s-3p^6 5p$	$^2S-^2P^o$	1650.568	0	60585.19	2	6	7.09E+05	8.69E-04
			1651.991	0	60533.02	2	2	7.09E+05	2.90E-04
			1649.858	0	60611.28	2	4	7.09E+05	5.79E-04
Ca II	$3p^6 4s-3p^6 6p$	$^2S-^2P^o$	1342.111	0	74509.47	2	6	2.72E+06	2.20E-03
			1342.554	0	74484.92	2	2	2.71E+06	7.32E-04
			1341.890	0	74521.75	2	4	2.72E+06	1.47E-03
Ca III	$3s^2 3p^6-3s^2 3p^5 4s$	$^1S-^1P^o$	403.7201	0	247696.39	1	3	9.55E+09	7.00E-01
Ca III	$3s^2 3p^6-3s^2 3p^5 3d$	$^1S-^1P^o$	357.9692	0	279353.64	1	3	6.65E+10	3.83E+00
Ca III	$3s^2 3p^6-3s^2 3p^5 4d$	$^1S-^1P^o$	296.9570	0	336749.11	1	3	2.95E+10	1.17E+00

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca IV	$3s^2 3p^5 - 3s 3p^6$	$2P^\circ - 2S$	660.5031	1039.4	152439.1	6	2	1.34E+09	2.93E-02
			669.6982	3118.1	152439.1	2	2	4.30E+08	2.89E-02
			655.9997	0	152439.1	4	2	9.14E+08	2.95E-02
Ca IV	$3s^2 3p^5 - 3p^4(^3P)4s^*$	$2P^\circ - 2P$	454.0187	1039.4	221294.6	6	6	2.82E+07	8.72E-04
			461.0947	3118.1	219993.3	2	2	1.80E+07	5.73E-04
			456.9816	3118.1	221945.3	2	4	4.62E+06	2.89E-04
			454.5593	0	219993.3	4	2	9.36E+06	1.45E-04
			450.5615	0	221945.3	4	4	2.41E+07	7.32E-04
Ca IV	$3s^2 3p^5 - 3p^4(^3P)3d^*$	$2P^\circ - 2D$	437.8149	1039.4	229446.4	6	10	1.40E+08	6.71E-03
			443.8158	3118.1	228436.8	2	4	1.12E+08	6.62E-03
			437.7578	0	228436.8	4	4	2.34E+07	6.72E-04
			434.5568	0	230119.5	4	6	1.43E+08	6.09E-03
Ca IV	$3s^2 3p^5 - 3p^4(^1D)3d^*$	$2P^\circ - 2D$	371.3781	1039.4	270306.7	6	10	6.21E+08	2.14E-02
			374.7367	3118.1	269972.1	2	4	5.03E+08	2.12E-02
			370.4086	0	269972.1	4	4	1.05E+08	2.15E-03
			369.6450	0	270529.8	4	6	6.31E+08	1.94E-02
Ca IV	$3s^2 3p^5 - 3p^4(^1D)3d$	$2P^\circ - 2S$	342.5017	1039.4	293008.7	6	2	7.66E+10	4.49E-01
			344.9577	3118.1	293008.7	2	2	2.50E+10	4.46E-01
			341.2868	0	293008.7	4	2	5.15E+10	4.50E-01
Ca IV	$3s^2 3p^5 - 3p^4(^3P)3d$	$2P^\circ - 2P$	341.0026	1039.4	294292.3	6	6	3.59E+10	6.26E-01
			343.9331	3118.1	293872.3	2	4	5.84E+09	2.07E-01
			342.4492	3118.1	295132.2	2	2	2.36E+10	4.15E-01
			340.2839	0	293872.3	4	4	3.01E+10	5.22E-01
			338.8312	0	295132.2	4	2	1.22E+10	1.05E-01
Ca IV	$3s^2 3p^5 - 3p^4(^1S)3d^*$	$2P^\circ - 2D$	331.9698	1039.4	302271.6	6	10	2.95E+10	8.13E-01
			332.5213	3118.1	303850.7	2	4	2.45E+10	8.12E-01
			331.9845	0	301218.9	4	6	2.95E+10	7.32E-01
			329.1090	0	303850.7	4	4	5.05E+09	8.20E-02
Ca IV	$3s^2 3p^5 - 3p^4(^1D)3d^*$	$2P^\circ - 2P$	331.8881	1039.4	302345.7	6	6	4.43E+10	7.32E-01
			334.8960	3118.1	301718.3	2	4	7.20E+09	2.42E-01
			332.7982	3118.1	303600.5	2	2	2.93E+10	4.87E-01
			331.4350	0	301718.3	4	4	3.71E+10	6.11E-01
			329.3802	0	303600.5	4	2	1.51E+10	1.23E-01
Ca IV	$3s^2 3p^5 - 3p^4(^1D)4s$	$2P^\circ - 2D$	320.9949	1039.4	312570.8	6	10	6.10E+10	1.57E+00
			323.0680	3118.1	312650.5	2	4	4.98E+10	1.56E+00
			319.9820	0	312517.6	4	6	6.12E+10	1.41E+00
			319.8460	0	312650.5	4	4	1.03E+10	1.58E-01
Ca IV	$3s^2 3p^5 - 3p^4(^1S)4s$	$2P^\circ - 2S$	297.4662	1039.4	337212.0	6	2	3.60E+08	1.59E-03
			299.3170	3118.1	337212.0	2	2	1.18E+08	1.58E-03
			296.5494	0	337212.0	4	2	2.41E+08	1.59E-03
Ca IV	$3s^2 3p^5 - 3p^4(^3P)4d$	$2P^\circ - 2D$	249.7381	1039.4	401458.8	6	10	4.30E+09	6.70E-02
			251.7339	3118.1	400362.9	2	4	3.50E+09	6.65E-02
			249.7734	0	400362.9	4	4	7.16E+08	6.70E-03
			248.6391	0	402189.4	4	6	4.36E+09	6.06E-02
Ca IV	$3s^2 3p^5 - 3p^4(^3P)5s^*$	$2P^\circ - 2P$	249.2672	1039.4	402215.4	6	6	1.54E+09	1.43E-02
			251.3695	3118.1	400938.9	2	2	1.00E+09	9.47E-03
			250.1654	3118.1	402853.6	2	4	2.54E+08	4.76E-03
			249.4146	0	400938.9	4	2	5.13E+08	2.39E-03
			248.2291	0	402853.6	4	4	1.30E+09	1.20E-02
Ca IV	$3s^2 3p^5 - 3p^4(^1D)4d$	$2P^\circ - 2S$	243.0044	1039.4	412554.5	6	2	2.35E+09	6.94E-03
			244.2382	3118.1	412554.5	2	2	7.73E+08	6.91E-03
			242.3922	0	412554.5	4	2	1.58E+09	6.96E-03
Ca IV	$3s^2 3p^5 - 3p^4(^3P)4d^*$	$2P^\circ - 2P$	241.9046	1039.4	414425.4	6	6	6.62E+09	5.81E-02
			244.2387	3118.1	412553.7	2	4	1.07E+09	1.91E-02
			242.3927	0	412553.7	4	4	5.48E+09	4.83E-02
			240.9344	3118.1	418168.9	2	2	4.46E+09	3.88E-02
			239.1378	0	418168.9	4	2	2.28E+09	9.79E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca IV	$3s^23p^5-3p^4(^1D)4d$	$^2P^\circ-^2P$	240.9577	1039.4	416049.9	6	6	2.55E+08	2.22E-03
			243.1023	3118.1	414467.6	2	2	1.66E+08	1.47E-03
			241.7076	3118.1	416841.1	2	4	4.21E+07	7.38E-04
			241.2734	0	414467.6	4	2	8.48E+07	3.70E-04
			239.8996	0	416841.1	4	4	2.16E+08	1.86E-03
Ca IV	$3s^23p^5-3p^4(^1D)4d$	$^2P^\circ-^2D$	240.4448	1039.4	416935.2	6	10	3.13E+09	4.52E-02
			241.3362	3118.1	417477.9	2	4	2.58E+09	4.50E-02
			240.0537	0	416573.4	4	6	3.15E+09	4.08E-02
			239.5336	0	417477.9	4	4	5.28E+08	4.54E-03
Ca IV	$3s^23p^5-3p^4(^1D)5s$	$^2P^\circ-^2D$	232.5417	1039.4	431069.8	6	10	1.12E+09	1.51E-02
			233.6676	3118.1	431076.5	2	4	9.16E+08	1.50E-02
			231.9834	0	431065.3	4	6	1.12E+09	1.36E-02
			231.9774	0	431076.5	4	4	1.87E+08	1.51E-03
Ca IV	$3s^23p^5-3p^4(^1S)4d$	$^2P^\circ-^2D$	227.8260	1039.4	439970.8	6	10	4.06E+08	5.26E-03
			228.8797	3118.1	440028.8	2	4	3.33E+08	5.23E-03
			227.3078	0	439932.1	4	6	4.08E+08	4.74E-03
			227.2579	0	440028.8	4	4	6.81E+07	5.27E-04
Ca IV	$3s^23p^5-3p^4(^1S)5s$	$^2P^\circ-^2S$	219.3624	1039.4	456906.0	6	2	1.40E+09	3.36E-03
			220.3673	3118.1	456906.0	2	2	4.60E+08	3.35E-03
			218.8634	0	456906.0	4	2	9.39E+08	3.37E-03
Ca V	$3s^23p^4-3s3p^5$	$^3P-^3P^\circ$	646.9954	1165.5	155726.1	9	9	8.68E+08	5.45E-02
			656.7450	2404.7	154670.8	3	5	2.08E+08	2.24E-02
			651.5312	3275.6	156760.2	1	3	2.83E+08	5.41E-02
			647.8551	2404.7	156760.2	3	3	2.18E+08	1.37E-02
			646.5344	0	154670.8	5	5	6.54E+08	4.10E-02
			643.1042	2404.7	157900.5	3	1	8.85E+08	1.83E-02
			637.9170	0	156760.2	5	3	3.80E+08	1.39E-02
Ca V	$3s^23p^4-3p^3(^2D^\circ)3d$	$^3P-^3S^\circ$	341.741	1165.5	293785	9	3	4.83E+10	2.82E-01
			344.223	3275.6	293785	1	3	5.25E+09	2.80E-01
			343.194	2404.7	293785	3	3	1.59E+10	2.80E-01
			340.385	0	293785	5	3	2.72E+10	2.83E-01
Ca V	$3s^23p^4-3p^3(^2P^\circ)3d$	$^3P-^3P^\circ$	335.849	1165.5	298918	9	9	9.52E+08	1.61E-02
			338.056	2404.7	298214	3	5	2.33E+08	6.66E-03
			337.543	3275.6	299534	1	3	3.12E+08	1.60E-02
			336.554	2404.7	299534	3	3	2.37E+08	4.02E-03
			335.357	2404.7	300594	3	1	9.55E+08	5.37E-03
			335.330	0	298214	5	5	7.18E+08	1.21E-02
			333.852	0	299534	5	3	4.04E+08	4.05E-03
Ca V	$3s^23p^4-3p^3(^2P^\circ)3d$	$^3P-^3D^\circ$	324.548	1165.5	309287	9	15	4.41E+08	1.16E-02
			325.281	2404.7	309831	3	5	3.28E+08	8.67E-03
			325.026	3275.6	310943	1	3	2.44E+08	1.16E-02
			324.477	0	308188	5	7	4.40E+08	9.73E-03
			324.109	2404.7	310943	3	3	1.84E+08	2.90E-03
			322.757	0	309831	5	5	1.12E+08	1.75E-03
			321.602	0	310943	5	3	1.26E+07	1.17E-04
Ca V	$3s^23p^4-3p^3(^4S^\circ)4s$	$^3P-^3S^\circ$	285.920	1165.5	350914	9	3	1.61E+10	6.56E-02
			287.655	3275.6	350914	1	3	1.75E+09	6.52E-02
			286.936	2404.7	350914	3	3	5.29E+09	6.53E-02
			284.970	0	350914	5	3	9.01E+09	6.58E-02
Ca V	$3s^23p^4-3p^3(^2D^\circ)4s$	$^3P-^3D^\circ$	271.273	1165.5	369798	9	15	4.77E+09	8.77E-02
			272.990	3275.6	369590	1	3	2.60E+09	8.71E-02
			272.342	2404.7	369590	3	3	1.97E+09	2.19E-02
			272.263	2404.7	369696	3	5	3.54E+09	6.55E-02
			270.570	0	369590	5	3	1.33E+08	8.79E-04
			270.493	0	369696	5	5	1.19E+09	1.31E-02
			270.300	0	369959	5	7	4.83E+09	7.40E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca V	$3s^2 3p^4 - 3p^3(^2P^\circ)4s$	$^3P - ^3P^\circ$	258.882	1165.5	387442	9	9	5.11E+09	5.13E-02
			260.450	3275.6	387226	1	3	1.67E+09	5.10E-02
			259.987	2404.7	387039	3	1	5.03E+09	1.70E-02
			259.861	2404.7	387226	3	3	1.26E+09	1.28E-02
			259.574	2404.7	387652	3	5	1.27E+09	2.13E-02
			258.247	0	387226	5	3	2.15E+09	1.29E-02
			257.963	0	387652	5	5	3.87E+09	3.86E-02
Ca V	$3s^2 3p^4 - 3p^3(^4S^\circ)5s$	$^3P - ^3S^\circ$	200.015	1165.5	501127	9	3	8.50E+09	1.70E-02
			200.863	3275.6	501127	1	3	9.31E+08	1.69E-02
			200.512	2404.7	501127	3	3	2.82E+09	1.70E-02
			199.550	0	501127	5	3	4.75E+09	1.70E-02
Ca V	$3s^2 3p^4 - 3p^3(^2D^\circ)5s$	$^3P - ^3D^\circ$	190.944	1165.5	524878	9	15	2.06E+09	1.88E-02
			191.800	3275.6	524651	1	3	1.13E+09	1.87E-02
			191.481	2404.7	524651	3	3	8.55E+08	4.70E-03
			191.437	2404.7	524770	3	5	1.54E+09	1.41E-02
			190.603	0	524651	5	3	5.78E+07	1.89E-04
			190.560	0	524770	5	5	5.20E+08	2.83E-03
			190.457	0	525053	5	7	2.09E+09	1.59E-02
Ca V	$3s^2 3p^4 - 3p^3(^2P^\circ)5s$	$^3P - ^3P^\circ$	184.729	1165.5	542500	9	9	2.44E+09	1.25E-02
			185.538	3275.6	542249	1	3	8.07E+08	1.25E-02
			185.239	2404.7	542249	3	3	6.06E+08	3.12E-03
			185.101	2404.7	542650	3	5	6.07E+08	5.20E-03
			184.417	0	542249	5	3	1.02E+09	3.13E-03
			184.281	0	542650	5	5	1.84E+09	9.39E-03
				2404.7		3	1	2.47E+09	4.22E-03
Ca VI	$3s^2 3p^3 - 3s3p^4$	$^4S^\circ - ^4P$	637.1287	0	156954.2	4	12	5.19E+08	9.48E-02
			641.9041	0	155786.5	4	6	5.08E+08	4.71E-02
			633.8441	0	157767.5	4	4	5.28E+08	3.18E-02
			629.6020	0	158830.5	4	2	5.38E+08	1.60E-02
Ca VI	$3s^2 3p^3 - 3p^2(^3P)4s$	$^4S^\circ - ^4P$	229.305	0	436100	4	12	8.41E+09	1.99E-01
			230.495	0	433849	4	2	8.31E+09	3.31E-02
			229.734	0	435286	4	4	8.40E+09	6.65E-02
			228.628	0	437392	4	6	8.51E+09	1.00E-01
Ca VII	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3D^\circ$	634.7257	2803.5	160351.9	9	15	4.92E+08	4.95E-02
			640.6720	4071.4	160157.5	5	3	1.33E+07	4.90E-04
			640.4144	4071.4	160220.3	5	5	1.20E+08	7.36E-03
			639.1500	4071.4	160529.2	5	7	4.82E+08	4.13E-02
			630.7851	1624.9	160157.5	3	3	2.10E+08	1.25E-02
			630.5353	1624.9	160220.3	3	5	3.76E+08	3.74E-02
			624.3854	0	160157.5	1	3	2.87E+08	5.03E-02
Ca VII	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3P^\circ$	547.6569	2803.5	185399.6	9	9	1.46E+09	6.55E-02
			551.5066	4071.4	185392.9	5	3	5.96E+08	1.63E-02
			551.4479	4071.4	185412.2	5	5	1.07E+09	4.88E-02
			544.2719	1624.9	185356.6	3	1	1.49E+09	2.20E-02
			544.1644	1624.9	185392.9	3	3	3.72E+08	1.65E-02
			544.1072	1624.9	185412.2	3	5	3.72E+08	2.75E-02
			539.3950	0	185392.9	1	3	5.08E+08	6.65E-02
Ca VII	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3S^\circ$	412.4783	2803.5	245240.5	9	3	3.13E+10	2.66E-01
			414.6468	4071.4	245240.5	5	3	1.71E+10	2.65E-01
			410.4827	1624.9	245240.5	3	3	1.06E+10	2.68E-01
			407.7630	0	245240.5	1	3	3.61E+09	2.70E-01
Ca VII	$3s^2 3p^2 - 3s^2 3p3d$	$^3P - ^3P^\circ$	351.649	2803.5	287178	9	9	2.47E+10	4.58E-01
			354.418	4071.4	286224	5	5	1.82E+10	3.42E-01
			352.003	4071.4	288160	5	3	1.03E+10	1.15E-01
			351.371	1624.9	286224	3	5	6.19E+09	1.91E-01
			348.997	1624.9	288160	3	3	6.35E+09	1.16E-01
			347.972	1624.9	289004	3	1	2.54E+10	1.54E-01
			347.029	0	288160	1	3	8.57E+09	4.64E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca VII	$3s^23p^2-3s^23p3d$	$^3P-^3D^o$	341.286	2803.5	295813	9	15	3.88E+10	1.13E+00
			343.564	4071.4	295138	5	3	1.05E+09	1.12E-02
			342.817	4071.4	295772	5	5	9.59E+09	1.69E-01
			342.395	4071.4	296132	5	7	3.85E+10	9.48E-01
			340.700	1624.9	295138	3	3	1.63E+10	2.84E-01
			339.966	1624.9	295772	3	5	2.95E+10	8.53E-01
			338.825	0	295138	1	3	2.21E+10	1.14E+00
Ca VII	$3s^23p^2-3s^23p4s$	$^3P-^3P^o$	204.133	2803.5	492681	9	9	2.30E+10	1.44E-01
			205.403	4071.4	490919	5	3	9.43E+09	3.58E-02
			204.736	1624.9	490059	3	1	2.29E+10	4.79E-02
			204.376	1624.9	490919	3	3	5.75E+09	3.60E-02
			204.002	4071.4	494262	5	5	1.73E+10	1.08E-01
			203.700	0	490919	1	3	7.72E+09	1.44E-01
			202.989	1624.9	494262	3	5	5.87E+09	6.04E-02
Ca VIII	$3s^23p-3s3p^2$	$^2P^o-^2D$	592.2237	2872.2	171727.3	6	10	8.15E+08	7.14E-02
			597.8576	4308.3	171572.2	4	4	1.32E+08	7.07E-03
			596.9351	4308.3	171830.7	4	6	7.95E+08	6.37E-02
			582.8450	0	171572.2	2	4	7.12E+08	7.25E-02
Ca VIII	$3s^23p-3s3p^2$	$^2P^o-^2S$	467.9179	2872.2	216584.9	6	2	6.91E+09	7.56E-02
			471.0835	4308.3	216584.9	4	2	4.51E+09	7.51E-02
			461.7127	0	216584.9	2	2	2.40E+09	7.66E-02
Ca VIII	$3s^23p-3s3p^2$	$^2P^o-^2P$	435.0441	2872.2	232734.0	6	6	2.01E+10	5.70E-01
			441.0960	4308.3	231016.3	4	2	6.42E+09	9.37E-02
			436.1394	4308.3	233592.8	4	4	1.66E+10	4.74E-01
			432.8699	0	231016.3	2	2	1.36E+10	3.82E-01
Ca VIII	$3s^23p-3s^23d$	$^2P^o-^2D$	428.0954	0	233592.8	2	4	3.53E+09	1.94E-01
			357.633	2872.2	282489	6	10	2.38E+10	7.61E-01
			359.651	4308.3	282356	4	4	3.90E+09	7.56E-02
			359.365	4308.3	282577	4	6	2.35E+10	6.82E-01
Ca VIII	$3s^23p-3s^24s$	$^2P^o-^2S$	354.163	0	282356	2	4	2.04E+10	7.68E-01
			183.672	2872.2	547322	6	2	4.56E+10	7.68E-02
			184.157	4308.3	547322	4	2	3.01E+10	7.66E-02
			182.708	0	547322	2	2	1.54E+10	7.72E-02
Ca VIII	$3s^23p-3s^24d$	$^2P^o-^2D$	143.787	2872.2	698345	6	10	2.21E+10	1.14E-01
			144.108	4308.3	698232	4	4	3.66E+09	1.14E-02
			144.069	4308.3	698420	4	6	2.19E+10	1.02E-01
			143.219	0	698232	2	4	1.87E+10	1.15E-01
Ca VIII	$3s^23p-3s^25d$	$^2P^o-^2D$	113.2689	2872.2	885727	6	10	1.35E+10	4.33E-02
			113.4578	4308.3	885693	4	4	2.24E+09	4.32E-03
			113.4505	4308.3	885750	4	6	1.34E+10	3.89E-02
			112.9059	0	885693	2	4	1.14E+10	4.34E-02
Ca VIII	$3s^23p-3s^26d$	$^2P^o-^2D$	102.3457	2872.2	979953	6	10	1.86E+09	4.87E-03
			102.5178	4308.3	979749	4	4	3.08E+08	4.86E-04
			102.4820	4308.3	980089	4	6	1.85E+09	4.38E-03
			102.0670	0	979749	2	4	1.56E+09	4.88E-03
Ca IX	$3s^2-3s3p$	$^1S-^1P^o$	466.240	0	214482	1	3	1.11E+10	1.09E+00
Ca IX	$3s^2-3p3d$	$^1S-^1P^o$	161.676	0	618520	1	3	1.64E+08	1.93E-03
Ca IX	$3s^2-3s4p$	$^1S-^1P^o$	120.147	0	832314	1	3	3.97E+10	2.58E-01
Ca IX	$3s^2-3s5p$	$^1S-^1P^o$	91.110	0	1097570	1	3	1.72E+10	6.44E-02
Ca IX	$3s^2-3s6p$	$^1S-^1P^o$	80.9173	0	1235830	1	3	1.30E+10	3.84E-02
Ca IX	$3s^2-3s7p$	$^1S-^1P^o$	76.028	0	1315300	1	3	9.23E+09	2.40E-02
Ca X	$2p^63s-2p^63p$	$^2S-^2P^o$	563.077	0	177596	2	6	3.57E+09	5.09E-01
			574.010	0	174213	2	2	3.36E+09	1.66E-01
			557.765	0	179287	2	4	3.68E+09	3.43E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca X	$2p^6 3s-2p^6 4p$	$^2S-^2P^o$	111.042	0	900560	2	6	2.89E+10	1.60E-01
			111.199	0	899290	2	2	2.88E+10	5.33E-02
			110.963	0	901200	2	4	2.90E+10	1.07E-01
Ca X	$2p^6 3s-2p^6 5p$	$^2S-^2P^o$	82.8187	0	1207460	2	6	1.73E+10	5.34E-02
			82.8603	0	1206850	2	2	1.73E+10	1.78E-02
			82.7979	0	1207760	2	4	1.73E+10	3.56E-02
Ca X	$2p^6 3s-2p^6 6p$	$^2S-^2P^o$	73.1682	0	1366710	2	6	1.05E+10	2.52E-02
			73.1872	0	1366360	2	2	1.04E+10	8.38E-03
			73.1588	0	1366890	2	4	1.05E+10	1.68E-02
Ca X	$2p^6 3s-2p^6 7p$	$^2S-^2P^o$	68.4969	0	1459920	2	6	6.68E+09	1.41E-02
			68.4969	0	1459920	2	4	6.67E+09	9.39E-03
			68.4969	0	1459920	2	2	6.68E+09	4.70E-03
Ca X	$2p^6 3s-2p^6 8p$	$^2S-^2P^o$	65.8241	0	1519200	2	6	4.49E+09	8.75E-03
			65.8241	0	1519200	2	4	4.49E+09	5.83E-03
			65.8241	0	1519200	2	2	4.50E+09	2.92E-03
Ca X	$2p^6 3s-2p^6 9p$	$^2S-^2P^o$	64.1330	0	1559260	2	6	3.15E+09	5.83E-03
			64.1330	0	1559260	2	4	3.15E+09	3.89E-03
			64.1330	0	1559260	2	2	3.15E+09	1.94E-03
Ca XI	$2s^2 2p^6-2p^5 3s$	$^1S-^1P^o$	35.2116	0	2839976	1	3	4.16E+11	2.32E-01
Ca XI	$2s^2 2p^6-2p^5 3d$	$^1S-^1P^o$	30.4468	0	3284414	1	3	5.61E+12	2.34E+00
Ca XI	$2s^2 2p^6-2p^5 3p$	$^1S-^1P^o$	26.962	0	3708900	1	3	9.30E+11	3.04E-01
Ca XI	$2s^2 2p^6-2p^5 4s$	$^1S-^1P^o$	26.442	0	3781900	1	3	9.09E+10	2.86E-02
Ca XI	$2s^2 2p^6-2p^5 4d$	$^1S-^1P^o$	25.327	0	3948400	1	3	2.26E+12	6.52E-01
Ca XII	$2s^2 2p^5-2s 2p^6$	$^2P^o-^2S$	143.06	10014	709030	6	2	5.98E+10	6.12E-02
			147.28	30041	709030	2	2	1.83E+10	5.94E-02
			141.04	0	709030	4	2	4.16E+10	6.21E-02
Ca XII	$2s^2 2p^5-2p^4(^3P)3s$	$^2P^o-^2P$	32.326	10014	3103500	6	6	6.77E+11	1.06E-01
			32.597	30041	3097800	2	4	1.10E+11	3.50E-02
			32.417	30041	3114800	2	2	4.46E+11	7.02E-02
			32.281	0	3097800	4	4	5.65E+11	8.82E-02
			32.105	0	3114800	4	2	2.29E+11	1.77E-02
Ca XII	$2s^2 2p^5-2p^4(^1D)3s$	$^2P^o-^2D$	31.758	10014	3158800	6	10	2.63E+11	6.62E-02
			31.956	30041	3159300	2	4	2.15E+11	6.57E-02
			31.661	0	3158500	4	6	2.65E+11	5.98E-02
			31.653	0	3159300	4	4	4.42E+10	6.64E-03
Ca XII	$2s^2 2p^5-2p^4(^1S)3s$	$^2P^o-^2S$	30.868	10014	3249600	6	2	2.60E+11	1.24E-02
			31.060	30041	3249600	2	2	8.50E+10	1.23E-02
			30.773	0	3249600	4	2	1.75E+11	1.24E-02
Ca XII	$2s^2 2p^5-2p^4(^3P)3d$	$^2P^o-^2P$	28.645	10014	3501000	6	6	3.71E+11	4.56E-02
			28.930	30041	3486700	2	2	2.40E+11	3.01E-02
			28.751	30041	3508200	2	4	6.13E+10	1.52E-02
			28.680	0	3486700	4	2	1.23E+11	7.59E-03
			28.505	0	3508200	4	4	3.14E+11	3.82E-02
Ca XII	$2s^2 2p^5-2p^4(^3P)3d$	$^2P^o-^2D$	28.615	10014	3504700	6	10	1.88E+12	3.84E-01
			28.864	30041	3494600	2	4	1.53E+12	3.81E-01
			28.616	0	3494600	4	4	3.13E+11	3.84E-02
			28.478	0	3511500	4	6	1.90E+12	3.47E-01
Ca XII	$2s^2 2p^5-2p^4(^1D)3d$	$^2P^o-^2S$	28.175	10014	3559300	6	2	4.41E+12	1.75E-01
			28.335	30041	3559300	2	2	1.45E+12	1.74E-01
			28.095	0	3559300	4	2	2.97E+12	1.76E-01



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca XII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2P$	28.051	10014	3574900	6	6	5.41E+12	6.38E-01
			28.210	30041	3574900	2	4	8.88E+11	2.12E-01
			27.973	0	3574900	4	4	4.55E+12	5.34E-01
				30041		2	2	3.61E+12	4.26E-01
				0		4	2	1.80E+12	1.06E-01
Ca XII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2D$	28.020	10014	3578900	6	10	4.35E+12	8.54E-01
			28.131	30041	3584900	2	4	3.58E+12	8.50E-01
			27.973	0	3574900	4	6	4.38E+12	7.70E-01
			27.895	0	3584900	4	4	7.35E+11	8.57E-02
Ca XII	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^\circ - ^2D$	27.475	10014	3649700	6	10	9.65E+11	1.82E-01
			27.607	30041	3652300	2	4	7.92E+11	1.81E-01
			27.413	0	3647900	4	6	9.76E+11	1.65E-01
			27.380	0	3652300	4	4	1.63E+11	1.83E-02
Ca XIII	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	162.049	11363	628462	9	9	2.72E+10	1.07E-01
			168.405	24460	618268	3	5	6.00E+09	4.25E-02
			164.109	28888	638238	1	3	8.67E+09	1.05E-01
			162.925	24460	638238	3	3	6.63E+09	2.64E-02
			161.742	0	618268	5	5	2.03E+10	7.98E-02
			159.835	24460	650105	3	1	2.80E+10	3.58E-02
			156.681	0	638238	5	3	1.24E+10	2.74E-02
Ca XIII	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	29.733	11363	3374600	9	3	9.51E+11	4.20E-02
			29.889	28888	3374600	1	3	1.04E+11	4.17E-02
			29.849	24460	3374600	3	3	3.13E+11	4.18E-02
			29.633	0	3374600	5	3	5.33E+11	4.21E-02
Ca XIII	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	29.035	11363	3455500	9	15	3.07E+11	6.46E-02
			29.207	28888	3452700	1	3	1.68E+11	6.43E-02
			29.169	24460	3452700	3	3	1.26E+11	1.61E-02
			29.165	24460	3453200	3	5	2.27E+11	4.83E-02
			28.963	0	3452700	5	3	8.59E+09	6.48E-04
			28.959	0	3453200	5	5	7.73E+10	9.72E-03
			28.916	0	3458300	5	7	3.11E+11	5.45E-02
Ca XIII	$2s^2 2p^4 - 2p^3(^4S^\circ)3d$	$^3P - ^3D^\circ$	26.81	11363	3741000	9	15	1.34E+12	2.41E-01
			26.92	24460	3739000	3	5	9.99E+11	1.81E-01
			26.75	0	3739000	5	5	3.38E+11	3.63E-02
			26.72	0	3743000	5	7	1.36E+12	2.04E-01
				28888		1	3	7.45E+11	2.41E-01
				24460		3	3	5.60E+11	6.03E-02
				0		5	3	3.73E+10	2.41E-03
Ca XIII	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3D^\circ$	26.14	11363	3837000	9	15	3.12E+12	5.32E-01
			26.32	28888	3828000	1	3	1.70E+12	5.29E-01
			26.29	24460	3828000	3	3	1.27E+12	1.32E-01
			26.22	24460	3838000	3	5	2.32E+12	3.98E-01
			26.12	0	3828000	5	3	8.68E+10	5.33E-03
			26.06	0	3838000	5	5	7.87E+11	8.01E-02
			26.03	0	3841000	5	7	3.16E+12	4.49E-01
Ca XIII	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3P^\circ$	26.04	11363	3851000	9	9	4.92E+12	5.00E-01
			26.16	28888	3852000	1	3	1.62E+12	4.98E-01
			26.13	24460	3851000	3	5	1.22E+12	2.08E-01
			26.13	24460	3852000	3	3	1.22E+12	1.25E-01
			25.97	0	3851000	5	5	3.72E+12	3.76E-01
			25.96	0	3852000	5	3	2.08E+12	1.26E-01
				24460		3	1	4.90E+12	1.66E-01
Ca XIII	$2s^2 2p^4 - 2p^3(^2D^\circ)3d$	$^3P - ^3S^\circ$	25.96	11363	3864000	9	3	5.05E+12	1.70E-01
			26.07	28888	3864000	1	3	5.53E+11	1.69E-01
			26.04	24460	3864000	3	3	1.67E+12	1.70E-01
			25.88	0	3864000	5	3	2.84E+12	1.71E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca XIII	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3P^\circ$	25.77	11363	3891000	9	9	5.25E+11	5.23E-02
			25.88	28888	3893000	1	3	1.73E+11	5.21E-02
			25.87	24460	3890000	3	5	1.30E+11	2.18E-02
			25.85	24460	3893000	3	3	1.31E+11	1.31E-02
			25.71	0	3890000	5	5	3.98E+11	3.94E-02
			25.69	0	3893000	5	3	2.22E+11	1.32E-02
				24460		3	1	5.24E+11	1.74E-02
Ca XIII	$2s^2 2p^4 - 2p^3(^2P^\circ)3d$	$^3P - ^3D^\circ$	25.60	11363	3917000	9	15	3.41E+12	5.58E-01
			25.74	28888	3914000	1	3	1.86E+12	5.55E-01
			25.71	24460	3914000	3	3	1.40E+12	1.39E-01
			25.67	24460	3920000	3	5	2.53E+12	4.17E-01
			25.55	0	3914000	5	3	9.52E+10	5.59E-03
			25.53	0	3917000	5	7	3.44E+12	4.70E-01
			25.51	0	3920000	5	5	8.60E+11	8.39E-02
Ca XIV	$2s^2 2p^3 - 2s2p^4$	$^4S^\circ - ^4P$	189.62	0	527370	4	12	8.22E+09	1.33E-01
			193.87	0	515800	4	6	7.68E+09	6.49E-02
			186.61	0	535870	4	4	8.62E+09	4.50E-02
			183.46	0	545090	4	2	9.04E+09	2.28E-02
Ca XIV	$2s^2 2p^3 - 2p^2(^3P)3d$	$^4S^\circ - ^4P$	24.114	0	4146900	4	12	6.84E+12	1.79E+00
			24.133	0	4143700	4	6	6.83E+12	8.95E-01
			24.086	0	4151800	4	4	6.88E+12	5.98E-01
				0		4	2	6.84E+12	2.98E-01
Ca XV	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3D^\circ$	211.55	25810	498510	9	15	4.59E+09	5.13E-02
			217.03	35923	496680	5	5	1.06E+09	7.51E-03
			216.62	35923	497570	5	3	1.19E+08	5.01E-04
			215.37	35923	500230	5	7	4.34E+09	4.23E-02
			208.72	17559	496680	3	5	3.58E+09	3.90E-02
			208.33	17559	497570	3	3	2.00E+09	1.30E-02
			200.98	0	497570	1	3	2.97E+09	5.40E-02
Ca XV	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3P^\circ$	179.06	25810	584270	9	9	1.18E+10	5.69E-02
			182.86	35923	582780	5	3	4.65E+09	1.40E-02
			181.90	35923	585670	5	5	8.49E+09	4.21E-02
			177.25	17559	581730	3	1	1.22E+10	1.92E-02
			176.92	17559	582780	3	3	3.09E+09	1.45E-02
			176.02	17559	585670	3	5	3.13E+09	2.42E-02
			171.59	0	582780	1	3	4.49E+09	5.94E-02
Ca XV	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3S^\circ$	142.23	25810	728880	9	3	6.40E+10	6.47E-02
			144.31	35923	728880	5	3	3.41E+10	6.38E-02
			140.58	17559	728880	3	3	2.21E+10	6.55E-02
			137.20	0	728880	1	3	7.93E+09	6.71E-02
Ca XV	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3D^\circ$	22.778	25810	4416100	9	15	7.14E+12	9.26E-01
			22.917	35923	4399500	5	3	1.95E+11	9.20E-03
			22.854	35923	4411500	5	5	1.76E+12	1.38E-01
			22.821	17559	4399500	3	3	2.96E+12	2.31E-01
			22.777	35923	4426400	5	7	7.14E+12	7.78E-01
			22.759	17559	4411500	3	5	5.37E+12	6.95E-01
			22.730	0	4399500	1	3	3.99E+12	9.27E-01
Ca XV	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3P^\circ$	22.680	25810	4435100	9	9	3.96E+12	3.05E-01
			22.735	35923	4434500	5	3	1.63E+12	7.60E-02
			22.730	35923	4435400	5	5	2.96E+12	2.29E-01
			22.640	17559	4434500	3	3	9.93E+11	7.63E-02
			22.635	17559	4435400	3	5	9.92E+11	1.27E-01
			22.550	0	4434500	1	3	1.34E+12	3.06E-01
				17559		3	1	3.93E+12	1.01E-01
Ca XVI	$2s^2 2p - 2s2p^2$	$^2P^\circ - ^2D$	219.04	24350	480880	6	10	3.94E+09	4.72E-02
			225.78	36520	479420	4	4	5.99E+08	4.58E-03
			224.55	36520	481860	4	6	3.65E+09	4.14E-02
			208.59	0	479420	2	4	3.80E+09	4.96E-02
Ca XVI	$2s^2 2p - 2s2p^2$	$^2P^\circ - ^2S$	176.11	24350	592180	6	2	1.53E+10	2.37E-02
			179.97	36520	592180	4	2	9.56E+09	2.32E-02
			168.87	0	592180	2	2	5.78E+09	2.47E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca XVI	$2s^22p-2s2p^2$	$^2P^o-^2P$	161.98	24350	641690	6	6	3.05E+10	1.20E-01
			167.44	36520	633760	4	2	9.18E+09	1.93E-02
			164.17	36520	645660	4	4	2.43E+10	9.83E-02
			157.79	0	633760	2	2	2.19E+10	8.18E-02
			154.88	0	645660	2	4	5.80E+09	4.17E-02
Ca XVI	$2s^22p-2s^23d$	$^2P^o-^2D$	21.56	24350	4663000	6	10	5.68E+12	6.59E-01
			21.62	36520	4662000	4	4	9.38E+11	6.57E-02
			21.61	36520	4664000	4	6	5.64E+12	5.92E-01
			21.45	0	4662000	2	4	4.81E+12	6.63E-01
Ca XVI	$2s^22p-2s2p(^3P^o)3p$	$^2P^o-^2P$	21.00	24350	4787000	6	6	2.27E+12	1.50E-01
			21.11	36520	4773000	4	2	7.45E+11	2.49E-02
			21.02	36520	4794000	4	4	1.89E+12	1.25E-01
			20.95	0	4773000	2	2	1.52E+12	1.00E-01
			20.86	0	4794000	2	4	3.86E+11	5.04E-02
Ca XVII	$2s^2-2s2p$	$^1S-^1P^o$	192.82	0	518620	1	3	1.11E+10	1.85E-01
Ca XVII	$2s^2-2s3p$	$^1S-^1P^o$	19.56	0	5113000	1	3	3.80E+12	6.54E-01
Ca XVIII	$1s^22s-1s^22p$	$^2S-^2P^o$	315.161	0	317298	2	6	1.73E+09	7.74E-02
			344.760	0	290057	2	2	1.32E+09	2.36E-02
			302.190	0	330918	2	4	1.96E+09	5.38E-02
Ca XVIII	$1s^22s-1s^23p$	$^2S-^2P^o$	18.705	0	5346300	2	6	2.37E+12	3.73E-01
			18.732	0	5338500	2	2	2.36E+12	1.24E-01
			18.691	0	5350200	2	4	2.38E+12	2.49E-01
Ca XVIII	$1s^22s-1s^24p$	$^2S-^2P^o$	14.052	0	7116300	2	6	1.06E+12	9.39E-02
			14.059	0	7112700	2	2	1.06E+12	3.13E-02
			14.049	0	7118100	2	4	1.06E+12	6.26E-02
Ca XVIII	$1s^22s-1s^25p$	$^2S-^2P^o$	12.636	0	7913900	2	6	5.42E+11	3.89E-02
			12.636	0	7913900	2	4	5.43E+11	2.60E-02
			12.636	0	7913900	2	2	5.43E+11	1.30E-02
Ca XVIII	$1s^22s-1s^26p$	$^2S-^2P^o$	11.99	0	8341000	2	6	3.12E+11	2.02E-02
			11.99	0	8341000	2	4	3.13E+11	1.35E-02
			11.99	0	8341000	2	2	3.13E+11	6.74E-03
Ca XVIII	$1s^22s-1s^27p$	$^2S-^2P^o$	11.62	0	8605000	2	6	1.98E+11	1.20E-02
			11.62	0	8605000	2	4	1.97E+11	7.98E-03
			11.62	0	8605000	2	2	1.97E+11	3.99E-03
Ca XIX	$1s^2-1s2p$	$^1S-^1P^o$	3.1772	0	[31473810]	1	3	1.72E+14	7.82E-01
Ca XIX	$1s^2-1s3p$	$^1S-^1P^o$	2.7054	0	[36962850]	1	3	4.71E+13	1.55E-01
Ca XIX	$1s^2-1s4p$	$^1S-^1P^o$	2.5714	0	[38888680]	1	3	1.93E+13	5.75E-02
Ca XIX	$1s^2-1s5p$	$^1S-^1P^o$	2.5138	0	[39780630]	1	3	9.75E+12	2.77E-02
Ca XX	$1s-2p$	$^2S-^2P^o$	3.0203	0	33109270	2	6	1.01E+14	4.16E-01
			3.0239	0	[33069710]	2	2	1.01E+14	1.39E-01
			3.0185	0	[33129060]	2	4	1.01E+14	2.77E-01
Ca XX	$1s-3p$	$^2S-^2P^o$	2.5494	0	39225540	2	6	2.70E+13	7.90E-02
			2.5501	0	[39213810]	2	2	2.70E+13	2.63E-02
			2.5490	0	[39231400]	2	4	2.70E+13	5.27E-02
Ca XX	$1s-4p$	$^2S-^2P^o$	2.4174	0	41366770	2	6	1.10E+13	2.90E-02
			2.4177	0	[41361830]	2	2	1.10E+13	9.67E-03
			2.4173	0	[41369250]	2	4	1.10E+13	1.93E-02
Ca XX	$1s-5p$	$^2S-^2P^o$	2.3609	0	42357550	2	6	5.54E+12	1.39E-02
			2.3610	0	[42355020]	2	2	5.56E+12	4.65E-03
			2.3608	0	[42358820]	2	4	5.56E+12	9.30E-03
Ca XX	$1s-6p$	$^2S-^2P^o$	2.3313	0	42894100	2	6	3.19E+12	7.80E-03
			2.3313	0	[42894100]	2	4	3.19E+12	5.20E-03
			2.3313	0	[42894100]	2	2	3.19E+12	2.60E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Ca XX	$1s-7p$	$^2S-^2P^o$	2.3138	0	43218950	2	6	2.00E+12	4.82E-03
			2.3138	0	[43218950]	2	4	2.00E+12	3.21E-03
			2.3138	0	[43218950]	2	2	1.99E+12	1.60E-03
Ca XX	$1s-8p$	$^2S-^2P^o$	2.3026	0	43429690	2	6	1.34E+12	3.19E-03
			2.3026	0	[43429690]	2	4	1.33E+12	2.12E-03
			2.3026	0	[43429690]	2	2	1.33E+12	1.06E-03
Ca XX	$1s-9p$	$^2S-^2P^o$	2.2949	0	43574120	2	6	9.37E+11	2.22E-03
			2.2949	0	[43574120]	2	4	9.37E+11	1.48E-03
			2.2949	0	[43574120]	2	2	9.35E+11	7.38E-04
Ca XX	$1s-10p$	$^2S-^2P^o$	2.2895	0	43677400	2	6	6.79E+11	1.60E-03
			2.2895	0	[43677400]	2	4	6.81E+11	1.07E-03
			2.2895	0	[43677400]	2	2	6.81E+11	5.35E-04
Fe I	$3d^6 4s^2 - 3d^6(^5D)4s4p(^3P^o)$	$^5D-^5D^o$	3883.8319	402.961	26150.728	25	25	1.00E+07	2.26E-02
			3931.4095	704.007	26140.177	5	7	1.58E+06	5.14E-03
			3929.0319	888.132	26339.694	3	5	2.22E+06	8.57E-03
			3924.0224	415.933	25899.987	7	9	1.08E+06	3.19E-03
			3921.3679	978.074	26479.379	1	3	2.60E+06	1.79E-02
			3907.5861	888.132	26479.379	3	3	8.32E+05	1.90E-03
			3900.8122	704.007	26339.694	5	5	2.58E+06	5.89E-03
			3896.7600	888.132	26550.477	3	1	9.39E+06	7.13E-03
			3887.3834	415.933	26140.177	7	7	5.29E+06	1.20E-02
			3879.6724	704.007	26479.379	5	3	6.60E+06	8.93E-03
			3861.0058	0	25899.987	9	9	9.69E+06	2.17E-02
			3857.4650	415.933	26339.694	7	5	4.64E+06	7.39E-03
			3825.5288	0	26140.177	9	7	2.83E+06	4.83E-03
Fe I	$3d^6 4s^2 - 3d^6(^5D)4s4p(^3P^o)$	$^5D-^5F^o$	3729.0473	402.961	27219.462	25	35	1.54E+07	4.48E-02
			3749.3276	888.132	27559.581	3	5	9.15E+06	3.21E-02
			3746.9642	978.074	27666.346	1	3	7.32E+06	4.62E-02
			3746.6259	704.007	27394.689	5	7	1.15E+07	3.39E-02
			3738.1941	415.933	27166.818	7	9	1.41E+07	3.81E-02
			3734.3790	888.132	27666.346	3	3	6.20E+06	1.30E-02
			3723.6218	704.007	27559.581	5	5	4.97E+06	1.03E-02
			3720.9928	0	26874.548	9	11	1.62E+07	4.12E-02
			3708.8770	704.007	27666.346	5	3	7.22E+05	8.93E-04
			3706.6201	415.933	27394.689	7	7	3.21E+06	6.62E-03
			3684.1032	415.933	27559.581	7	5	2.83E+05	4.12E-04
			3680.9611	0	27166.818	9	9	1.37E+06	2.80E-03
			3650.3426	0	27394.689	9	7	4.50E+04	6.99E-05
Fe I	$3d^6 4s^2 - 3d^6(^5D)4s4p(^3P^o)$	$^5D-^5P^o$	3457.0723	402.961	29329.171	25	15	2.50E+07	2.69E-02
			3527.0488	704.007	29056.322	5	7	1.13E+06	2.96E-03
			3498.8414	888.132	29469.022	3	5	3.07E+06	9.39E-03
			3491.5727	415.933	29056.322	7	7	6.07E+06	1.11E-02
			3477.6972	978.074	29732.734	1	3	5.68E+06	3.09E-02
			3476.4453	704.007	29469.022	5	5	9.84E+06	1.78E-02
			3466.8532	888.132	29732.734	3	3	1.19E+07	2.15E-02
			3444.8634	704.007	29732.734	5	3	7.99E+06	8.53E-03
			3441.9748	415.933	29469.022	7	5	1.23E+07	1.57E-02
			3441.5918	0	29056.322	9	7	1.72E+07	2.38E-02
Fe I	$3d^6 4s^2 - 3d^7(^4F)4p$	$^5D-^5D^o$	3021.0749	402.961	33503.762	25	25	9.68E+07	1.33E-01
			3059.9750	415.933	33095.939	7	9	1.62E+07	2.92E-02
			3048.4911	704.007	33507.121	5	7	2.82E+07	5.51E-02
			3038.2727	888.132	33801.570	3	5	2.88E+07	6.65E-02
			3026.7235	978.074	34017.101	1	3	3.51E+07	1.45E-01
			3021.9526	415.933	33507.121	7	7	4.55E+07	6.24E-02
			3021.5187	0	33095.939	9	9	7.58E+07	1.04E-01
			3021.3705	704.007	33801.570	5	5	1.93E+07	2.64E-02
			3018.5063	888.132	34017.101	3	3	6.88E+06	9.39E-03
			3009.0148	888.132	34121.601	3	1	1.06E+08	4.82E-02
			3001.8226	704.007	34017.101	5	3	6.34E+07	5.14E-02
			2995.3000	415.933	33801.570	7	5	4.39E+07	4.22E-02
			2984.4402	0	33507.121	9	7	2.81E+07	2.92E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe I	$3d^6 4s^2 - 3d^7(^4F)4p$	$^5D-^5F^o$	2966.0638	402.961	34117.677	25	35	3.16E+07	5.83E-02
			2974.1032	415.933	34039.514	7	9	1.83E+07	3.13E-02
			2974.0004	704.007	34328.750	5	7	1.36E+07	2.52E-02
			2970.9668	888.132	34547.209	3	5	1.12E+07	2.47E-02
			2967.7646	0	33695.395	9	11	2.74E+07	4.42E-02
			2966.1205	978.074	34692.146	1	3	1.16E+07	4.57E-02
			2958.2286	888.132	34692.146	3	3	1.76E+07	2.31E-02
			2954.8032	704.007	34547.209	5	5	1.88E+07	2.46E-02
			2948.7376	415.933	34328.750	7	7	1.82E+07	2.37E-02
			2942.2029	704.007	34692.146	5	3	5.12E+06	3.99E-03
			2937.7623	0	34039.514	9	9	1.39E+07	1.80E-02
			2929.8641	415.933	34547.209	7	5	5.15E+06	4.73E-03
			2913.0102	0	34328.750	9	7	2.63E+06	2.60E-03
Fe I	$3d^6 4s^2 - 3d^6(^5D)4s4p(^1P^o)$	$^5D-^5P^o$	2730.5453	402.961	37025.682	25	15	1.84E+08	1.24E-01
			2772.9285	704.007	36766.964	5	7	4.12E+06	6.65E-03
			2757.1427	888.132	37157.564	3	5	2.01E+07	3.82E-02
			2750.9536	415.933	36766.964	7	7	3.89E+07	4.41E-02
			2744.8790	978.074	37409.552	1	3	3.55E+07	1.20E-01
			2743.2165	704.007	37157.564	5	5	6.29E+07	7.10E-02
			2738.1192	888.132	37409.552	3	3	8.36E+07	9.39E-02
			2724.3840	704.007	37409.552	5	3	6.40E+07	4.28E-02
			2721.7082	415.933	37157.564	7	5	1.06E+08	8.41E-02
			2719.8329	0	36766.964	9	7	1.38E+08	1.19E-01
Fe I	$3d^6 4s^2 - 3d^6(^5D)4s4p(^1P^o)$	$^5D-^5D^o$	2527.2727	402.961	39971.306	25	25	3.25E+08	3.11E-01
			2550.3784	415.933	39625.801	7	9	3.60E+07	4.52E-02
			2546.7427	704.007	39969.850	5	7	6.72E+07	9.14E-02
			2541.7352	888.132	40231.333	3	5	9.22E+07	1.49E-01
			2536.3689	978.074	40404.515	1	3	9.74E+07	2.82E-01
			2530.5960	888.132	40404.515	3	3	3.84E+07	3.69E-02
			2529.8954	704.007	40231.333	5	5	9.75E+07	9.35E-02
			2528.1946	415.933	39969.850	7	7	1.88E+08	1.80E-01
			2525.0517	888.132	40491.281	3	1	3.39E+08	1.08E-01
			2523.6083	0	39625.801	9	9	2.92E+08	2.79E-01
			2518.8595	704.007	40404.515	5	3	1.88E+08	1.07E-01
			2511.5910	415.933	40231.333	7	5	1.30E+08	8.81E-02
			2501.8858	0	39969.850	9	7	6.80E+07	4.96E-02
Fe I	$3d^6 4s^2 - 3d^6(^5D)4s4p(^1P^o)$	$^5D-^5F^o$	2484.9947	402.961	40644.496	25	35	4.80E+08	6.22E-01
			2491.9065	888.132	41018.048	3	5	2.90E+08	4.50E-01
			2491.3957	704.007	40842.151	5	7	3.44E+08	4.48E-01
			2490.5036	978.074	41130.596	1	3	2.31E+08	6.46E-01
			2488.8936	415.933	40594.429	7	9	4.24E+08	5.07E-01
			2484.9373	888.132	41130.596	3	3	2.27E+08	2.10E-01
			2484.0209	0	40257.311	9	11	4.81E+08	5.44E-01
			2480.5253	704.007	41018.048	5	5	1.72E+08	1.59E-01
			2473.6422	415.933	40842.151	7	7	1.30E+08	1.19E-01
			2473.6195	704.007	41130.596	5	3	2.09E+07	1.15E-02
			2463.3922	0	40594.429	9	9	5.85E+07	5.32E-02
			2462.9259	415.933	41018.048	7	5	1.10E+07	7.16E-03
			2448.4509	0	40842.151	9	7	3.32E+06	2.32E-03
Fe I	$3d^6 4s^2 - 3d^6(^3P)4s4p(^3P^o)$	$^5D-^5P^o$	2361.3840	402.961	42751.007	25	15		
			2390.7013	704.007	42532.738	5	7	4.49E+06	5.38E-03
			2382.5610	888.132	42859.775	3	5	4.38E+06	6.21E-03
			2375.2435	978.074	43079.020	1	3	3.13E+06	7.94E-03
			2374.3491	415.933	42532.738	7	7	6.58E+06	5.56E-03
			2372.1546	704.007	42859.775	5	5	2.66E+06	2.24E-03
			2370.1800	888.132	43079.020	3	3	2.56E+06	2.15E-03
			2351.1301	0	42532.738	9	7	1.61E+05	1.04E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe I	$3d^6 4s^2 - 3d^6(^3P)4s4p(^3P^o)$	$^5D-^5D^o$	2298.8703	402.961	43902.588	25	25	3.86E+07	3.05E-02
			2321.0705	415.933	43499.502	7	9	1.41E+07	1.46E-02
			2313.8155	704.007	43922.665	5	7	1.18E+07	1.32E-02
			2309.7092	888.132	44183.625	3	5	1.02E+07	1.36E-02
			2302.3924	978.074	44411.157	1	3	8.76E+06	2.09E-02
			2299.9282	704.007	44183.625	5	5	6.95E+06	5.51E-03
			2298.8769	0	43499.502	9	9	3.07E+07	2.43E-02
			2298.4949	415.933	43922.665	7	7	1.43E+07	1.13E-02
			2297.6344	888.132	44411.157	3	3	4.02E+06	3.18E-03
			2295.1151	888.132	44458.931	3	1	3.57E+07	9.39E-03
			2287.9552	704.007	44411.157	5	3	2.23E+07	1.05E-02
			2284.7903	415.933	44183.625	7	5	1.28E+07	7.16E-03
			2276.7289	0	43922.665	9	7	1.24E+07	7.51E-03
Fe I	$3d^6 4s^2 - 3d^6(^3F)4s4p(^3P^o)$	$^5D-^5D^o$	2277.4445	402.961	44311.824	25	25		
			2300.8501	704.007	44166.203	5	7	4.96E+06	5.51E-03
			2293.2314	415.933	44022.522	7	9	2.94E+06	2.98E-03
			2284.3599	888.132	44664.072	3	5	1.54E+06	2.01E-03
			2284.0088	978.074	44760.743	1	3	2.57E+06	6.03E-03
			2275.8946	888.132	44826.897	3	1	6.16E+06	1.60E-03
			2259.9821	415.933	44664.072	7	5	1.28E+06	7.00E-04
Fe I	$3d^6 4s^2 - 3d^6(^5D)4s4p(^3P^o)$	$^5D-^5F^o$	2274.5970	402.961	44366.792	25	35		
			2304.2898	888.132	44285.451	3	5	4.79E+06	6.35E-03
			2304.1334	978.074	44378.339	1	3	7.28E+06	1.74E-02
			2299.3682	888.132	44378.339	3	3	1.60E+06	1.27E-03
			2294.5545	704.007	44285.451	5	5	1.08E+06	8.53E-04
			2280.6408	704.007	44551.332	5	7	1.87E+06	2.05E-03
			2272.7718	415.933	44415.071	7	9	2.93E+06	2.92E-03
			2265.7550	415.933	44551.332	7	7	1.44E+06	1.11E-03
			2260.2097	0	44243.682	9	11	5.68E+06	5.32E-03
			2251.4880	0	44415.071	9	9	1.22E+06	9.24E-04
Fe I	$3d^6 4s^2 - 3d^7(^4P)4p$	$^5D-^5P^o$	2181.1391	402.961	46250.564	25	15		
			2201.4114	888.132	46313.534	3	5	2.82E+07	3.41E-02
			2196.7282	888.132	46410.378	3	3	1.18E+08	8.57E-02
			2192.5244	704.007	46313.534	5	5	1.16E+08	8.34E-02
			2167.4534	0	46137.094	9	7	2.74E+08	1.50E-01
Fe I	$3d^6 4s^2 - 3d^7(^4P)4p$	$^5D-^5D^o$	2153.7349	402.961	46833.931	25	25		
			2171.9780	704.007	46744.990	5	7	5.07E+06	5.02E-03
			2139.2667	0	46744.990	9	7	2.81E+06	1.50E-03
Fe I	$3d^6 4s^2 - 3d^5 4s^2(^6S)4p$	$^5D-^5P^o$	2096.7042	402.961	48096.860	25	15		
			2113.6379	978.074	48289.868	1	3	1.89E+07	3.80E-02
			2103.0207	415.933	47966.582	7	7	8.78E+06	5.82E-03
			2084.7848	0	47966.582	9	7	3.72E+07	1.89E-02
Fe I	$3d^6 4s^2 - 3d^6 4s(^6D)5p$	$^5D-^5F^o$	1959.8832	402.961	51426.409	25	35		
			1937.2684	0	51619.073	9	7	2.16E+07	9.46E-03
Fe I	$3d^6 4s^2 - 3d^6 4s(^6D)5p$	$^5D-^5P^o$	1943.3694	402.961	51859.983	25	15		
			1940.6605	415.933	51944.781	7	5	1.29E+07	5.19E-03
			1934.5351	0	51692.007	9	7	2.55E+07	1.11E-02
Fe II	$3d^6(^5D)4s - 3d^6(^5D)4p$	$^6D-^6D^o$	2611.4059	416.299	38709.848	30	30	2.87E+08	2.94E-01
			2632.1081	667.683	38660.043	6	8	9.01E+07	1.25E-01
			2631.8321	862.613	38858.958	4	6	1.12E+08	1.75E-01
			2629.0777	977.053	39013.206	2	4	1.10E+08	2.28E-01
			2626.4511	384.790	38458.981	8	10	5.22E+07	6.75E-02
			2622.4518	977.053	39109.307	2	2	6.32E+07	6.52E-02
			2621.1912	862.613	39013.206	4	4	3.12E+06	3.22E-03
			2618.3991	667.683	38858.958	6	6	4.88E+07	5.02E-02
			2614.6051	862.613	39109.307	4	2	2.23E+08	1.14E-01
			2612.6542	384.790	38660.043	8	8	1.28E+08	1.31E-01
			2607.8664	667.683	39013.206	6	4	1.73E+08	1.18E-01
			2600.1729	0	38458.981	10	10	2.37E+08	2.40E-01
			2599.1465	384.790	38858.958	8	6	1.25E+08	9.48E-02
			2586.6500	0	38660.043	10	8	6.83E+07	5.48E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe II	$3d^6(^5D)4s - 3d^6(^5D)4p$	$^6D-^6F^o$	2394.9771	416.299	42170.352	30	42	3.30E+08	3.98E-01
			2414.0450	977.053	42401.302	2	4	1.00E+08	1.75E-01
			2411.8023	977.053	42439.822	2	2	2.52E+08	2.20E-01
			2411.2533	862.613	42334.822	4	6	1.55E+08	2.03E-01
			2407.3942	862.613	42401.302	4	4	1.85E+08	1.61E-01
			2405.6186	667.683	42237.033	6	8	2.10E+08	2.43E-01
			2405.1638	862.613	42439.822	4	2	7.24E+07	3.14E-02
			2399.9728	667.683	42334.822	6	6	1.52E+08	1.31E-01
			2396.3559	384.790	42114.818	8	10	2.68E+08	2.89E-01
			2396.1497	667.683	42401.302	6	4	3.96E+07	2.27E-02
			2389.3582	384.790	42237.033	8	8	1.13E+08	9.68E-02
			2383.7884	384.790	42334.822	8	6	1.91E+07	1.22E-02
			2382.7652	0	41968.046	10	12	3.35E+08	3.43E-01
			2374.4612	0	42114.818	10	10	6.24E+07	5.27E-02
			2367.5905	0	42237.033	10	8	6.32E+06	4.25E-03
Fe II	$3d^6(^5D)4s - 3d^6(^5D)4p$	$^6D-^6P^o$	2344.7034	416.299	43065.617	30	18	2.56E+08	1.26E-01
			2381.4887	667.683	42658.224	6	8	8.72E+06	9.88E-03
			2365.5518	384.790	42658.224	8	8	5.35E+07	4.49E-02
			2359.8278	862.613	43238.586	4	6	3.01E+07	3.77E-02
			2349.0223	667.683	43238.586	6	6	9.32E+07	7.71E-02
			2345.0011	977.053	43620.957	2	4	7.66E+07	1.26E-01
			2344.2139	0	42658.224	10	8	1.92E+08	1.26E-01
			2338.7248	862.613	43620.957	4	4	1.08E+08	8.87E-02
			2333.5156	384.790	43238.586	8	6	1.33E+08	8.15E-02
			2328.1112	667.683	43620.957	6	4	7.31E+07	3.96E-02
Fe II	$3d^6(^5D)4s - 3d^5(^6S)4s4p(^3P^o)$	$^6D-^6P^o$	1621.5144	416.299	62087.043	30	18	3.74E+08	8.85E-02
			1639.4012	977.053	61974.933	2	4	1.09E+08	8.75E-02
			1636.3313	862.613	61974.933	4	4	1.53E+08	6.14E-02
			1634.3498	862.613	62049.025	4	6	4.38E+07	2.63E-02
			1631.1285	667.683	61974.933	6	4	1.03E+08	2.74E-02
			1629.1596	667.683	62049.025	6	6	1.35E+08	5.38E-02
			1625.9123	667.683	62171.615	6	8	1.33E+07	7.01E-03
			1621.6856	384.790	62049.025	8	6	1.92E+08	5.68E-02
			1618.4680	384.790	62171.615	8	8	8.09E+07	3.18E-02
			1608.4511	0	62171.615	10	8	2.87E+08	8.92E-02
Fe II	$3d^6(^5D)4s - 3d^5(^6S)4s4p(^1P^o)$	$^6D-^6P^o$	1267.7361	416.299	79297.070	30	18	1.21E+08	1.75E-02
			1277.6431	977.053	79246.170	2	4	3.54E+07	1.73E-02
			1275.7778	862.613	79246.170	4	4	4.98E+07	1.21E-02
			1275.1443	862.613	79285.110	4	6	1.42E+07	5.21E-03
			1272.6129	667.683	79246.170	6	4	3.34E+07	5.41E-03
			1271.9826	667.683	79285.110	6	6	4.38E+07	1.06E-02
			1271.2325	667.683	79331.500	6	8	4.28E+06	1.38E-03
			1267.4220	384.790	79285.110	8	6	6.21E+07	1.12E-02
			1266.6772	384.790	79331.500	8	8	2.60E+07	6.26E-03
			1260.5333	0	79331.500	10	8	9.22E+07	1.76E-02
Fe II	$3d^6(^5D)4s - 3d^5(^4G)4s4p(^3P^o)$	$^6D-^6F^o$	1148.3992	416.299	87494.031	30	42	5.60E+08	1.55E-01
			1154.3985	977.053	87602.250	2	4	1.71E+08	6.83E-02
			1153.2719	862.613	87572.431	4	6	2.65E+08	7.94E-02
			1152.8755	862.613	87602.250	4	4	3.15E+08	6.28E-02
			1151.1458	667.683	87537.653	6	8	3.58E+08	9.50E-02
			1150.6851	667.683	87572.431	6	6	2.58E+08	5.12E-02
			1150.4691	977.053	87898.120	2	2	4.34E+08	8.62E-02
			1150.2904	667.683	87602.250	6	4	6.68E+07	8.84E-03
			1148.9564	862.613	87898.120	4	2	1.24E+08	1.23E-02
			1148.2773	384.790	87471.765	8	10	4.56E+08	1.13E-01
			1147.4092	384.790	87537.653	8	8	1.91E+08	3.77E-02
			1146.9516	384.790	87572.431	8	6	3.20E+07	4.74E-03
			1144.9390	0	87340.894	10	12	5.65E+08	1.33E-01
			1143.2260	0	87471.765	10	10	1.04E+08	2.05E-02
			1142.3656	0	87537.653	10	8	1.05E+07	1.65E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe II	$3d^6(^5D)4s - 3d^5(^4P)4s4p(^3P^o)$	$^6D-^6D^o$	1138.5984	416.299	88243.578	30	30	1.85E+07	3.59E-03
			1153.9500	977.053	87635.920	2	2	3.95E+06	7.89E-04
			1152.4281	862.613	87635.920	4	2	1.39E+07	1.38E-03
			1149.5892	977.053	87964.650	2	4	6.99E+06	2.77E-03
			1148.0788	862.613	87964.650	4	4	1.98E+05	3.91E-05
			1146.8315	862.613	88059.381	4	6	7.22E+06	2.14E-03
			1145.5152	667.683	87964.650	6	4	1.09E+07	1.43E-03
			1144.2735	667.683	88059.381	6	6	3.12E+06	6.11E-04
			1142.3118	667.683	88209.453	6	8	5.87E+06	1.53E-03
			1140.5813	384.790	88059.381	8	6	7.86E+06	1.15E-03
			1138.6323	384.790	88209.453	8	8	8.26E+06	1.60E-03
			1133.6653	0	88209.453	10	8	4.32E+06	6.66E-04
			1133.4048	384.790	88614.517	8	10	3.46E+06	8.33E-04
			1128.4833	0	88614.517	10	10	1.54E+07	2.95E-03
Fe II	$3d^6(^5D)4s - 3d^6(^5D)5p$	$^6D-^6D^o$	1129.2810	416.299	88968.219	30	30	8.45E+07	1.62E-02
			1133.9688	667.683	88853.534	6	8	2.68E+07	6.89E-03
			1133.0566	862.613	89119.458	4	6	3.35E+07	9.66E-03
			1132.0078	384.790	88723.401	8	10	1.55E+07	3.73E-03
			1131.8089	977.053	89331.195	2	4	3.27E+07	1.26E-02
			1130.5596	667.683	89119.458	6	6	1.44E+07	2.76E-03
			1130.3448	862.613	89331.195	4	4	9.27E+05	1.77E-04
			1130.3427	384.790	88853.534	8	8	3.77E+07	7.22E-03
			1130.0161	977.053	89471.366	2	2	1.88E+07	3.60E-03
			1128.5567	862.613	89471.366	4	2	6.60E+07	6.30E-03
			1127.8597	667.683	89331.195	6	4	5.09E+07	6.47E-03
			1127.0984	0	88723.401	10	10	6.92E+07	1.32E-02
			1126.9553	384.790	89119.458	8	6	3.64E+07	5.20E-03
			1125.4476	0	88853.534	10	8	1.97E+07	3.00E-03
Fe II	$3d^6(^5D)4s - 3d^5(^4P)4s4p(^3P^o)$	$^6D-^6P^o$	1124.5041	416.299	89344.391	30	18	7.14E+08	8.12E-02
			1130.4432	667.683	89128.561	6	8	2.51E+07	6.42E-03
			1128.8995	862.613	89444.458	4	6	8.47E+07	2.43E-02
			1128.0457	977.053	89625.940	2	4	2.12E+08	8.10E-02
			1126.8397	384.790	89128.561	8	8	1.53E+08	2.90E-02
			1126.5914	862.613	89625.940	4	4	2.98E+08	5.67E-02
			1126.4207	667.683	89444.458	6	6	2.60E+08	4.96E-02
			1124.1227	667.683	89625.940	6	4	2.00E+08	2.53E-02
			1122.8427	384.790	89444.458	8	6	3.68E+08	5.22E-02
			1121.9748	0	89128.561	10	8	5.39E+08	8.14E-02
Fe II	$3d^6(^5D)4s - 3d^6(^5D)5p$	$^6D-^6F^o$	1113.6799	416.299	90208.711	30	42	1.22E+07	3.17E-03
			1115.8666	977.053	90593.497	2	4	3.75E+06	1.40E-03
			1115.7577	862.613	90487.810	4	6	5.81E+06	1.63E-03
			1115.6612	667.683	90300.626	6	8	7.81E+06	1.94E-03
			1115.1857	977.053	90648.218	2	2	9.46E+06	1.76E-03
			1115.0440	384.790	90067.347	8	10	9.87E+06	2.30E-03
			1114.4435	862.613	90593.497	4	4	6.92E+06	1.29E-03
			1113.7643	862.613	90648.218	4	2	2.70E+06	2.51E-04
			1113.3362	667.683	90487.810	6	6	5.65E+06	1.05E-03
			1112.1511	384.790	90300.626	8	8	4.16E+06	7.71E-04
			1112.0480	0	89924.175	10	12	1.22E+07	2.72E-03
			1112.0277	667.683	90593.497	6	4	1.47E+06	1.81E-04
			1110.2803	0	90067.347	10	10	2.26E+06	4.18E-04
			1109.8407	384.790	90487.810	8	6	7.01E+05	9.71E-05
Fe II	$3d^6(^5D)4s - 3d^6(^5D)5p$	$^6D-^6P^o$	1107.4120	0	90300.626	10	8	2.29E+05	3.37E-05
			1098.4486	416.299	91453.789	30	18	1.27E+08	1.38E-02
			1104.9693	667.683	91167.938	6	8	4.47E+06	1.09E-03
			1102.3836	862.613	91575.139	4	6	1.51E+07	4.13E-03
			1101.5260	384.790	91167.938	8	8	2.72E+07	4.94E-03
			1100.5166	977.053	91843.471	2	4	3.80E+07	1.38E-02
			1100.0198	667.683	91575.139	6	6	4.65E+07	8.44E-03
			1099.1323	862.613	91843.471	4	4	5.34E+07	9.67E-03
			1096.8768	0	91167.938	10	8	9.59E+07	1.38E-02
			1096.7824	667.683	91843.471	6	4	3.58E+07	4.31E-03
			1096.6073	384.790	91575.139	8	6	6.57E+07	8.89E-03



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe II	$3d^6(^5D)4s - 3d^5(^4D)4s4p(^3P^o)$	$^6D-^6F^o$	1089.3769	416.299	92211.891	30	42	6.44E+07	1.60E-02
			1100.4288	977.053	91850.723	2	2	4.88E+07	8.85E-03
			1099.6395	977.053	91915.950	2	4	1.94E+07	7.04E-03
			1099.0447	862.613	91850.723	4	2	1.39E+07	1.26E-03
			1098.2574	862.613	91915.950	4	4	3.58E+07	6.48E-03
			1097.0191	862.613	92018.730	4	6	3.03E+07	8.20E-03
			1095.9112	667.683	91915.950	6	4	7.60E+06	9.12E-04
			1094.6782	667.683	92018.730	6	6	2.94E+07	5.29E-03
			1093.0576	667.683	92154.166	6	8	4.11E+07	9.83E-03
			1091.2987	384.790	92018.730	8	6	3.65E+06	4.89E-04
			1089.6881	384.790	92154.166	8	8	2.19E+07	3.90E-03
			1087.9559	384.790	92300.277	8	10	5.27E+07	1.17E-02
			1085.1381	0	92154.166	10	8	1.21E+06	1.70E-04
			1083.4204	0	92300.277	10	10	1.20E+07	2.12E-03
			1081.8748	0	92432.137	10	12	6.58E+07	1.38E-02
Fe II	$3d^6(^5D)4s - 3d^5(^4D)4s4p(^3P^o)$	$^6D-^6D^o$	1068.9859	416.299	93962.906	30	30	4.83E+08	8.28E-02
			1076.8518	977.053	93840.340	2	4	1.84E+08	6.41E-02
			1075.6347	862.613	93830.979	4	6	1.90E+08	4.94E-02
			1075.5264	862.613	93840.340	4	4	5.22E+06	9.05E-04
			1074.6411	977.053	94031.379	2	2	1.06E+08	1.84E-02
			1073.3841	667.683	93830.979	6	6	8.18E+07	1.41E-02
			1073.3211	862.613	94031.379	4	2	3.72E+08	3.22E-02
			1073.2763	667.683	93840.340	6	4	2.87E+08	3.30E-02
			1071.5842	667.683	93987.457	6	8	1.54E+08	3.54E-02
			1070.1346	384.790	93830.979	8	6	2.06E+08	2.66E-02
			1068.3456	384.790	93987.457	8	8	2.17E+08	3.71E-02
			1067.5437	384.790	94057.773	8	10	8.98E+07	1.92E-02
			1063.9718	0	93987.457	10	8	1.13E+08	1.54E-02
			1063.1764	0	94057.773	10	10	4.00E+08	6.78E-02
Fe II	$3d^6(^5D)4s - 3d^5(^4D)4s4p(^3P^o)$	$^6D-^6P^o$	1061.5964	416.299	94614.055	30	18	7.01E+06	7.10E-04
			1072.5914	977.053	94209.200	2	4	2.04E+06	7.03E-04
			1071.2764	862.613	94209.200	4	4	2.86E+06	4.93E-04
			1069.0440	667.683	94209.200	6	4	1.92E+06	2.19E-04
			1065.8427	862.613	94685.090	4	6	8.31E+05	2.12E-04
			1063.6328	667.683	94685.090	6	6	2.55E+06	4.33E-04
			1062.7497	667.683	94763.220	6	8	2.50E+05	5.64E-05
			1060.4420	384.790	94685.090	8	6	3.61E+06	4.56E-04
			1059.5641	384.790	94763.220	8	8	1.52E+06	2.55E-04
			1055.2617	0	94763.220	10	8	5.35E+06	7.15E-04
Fe II	$3d^6(^5D)4s - 3d^5(^4F)4s4p(^3P^o)$	$^6D-^6F^o$	942.0256	416.299	106570.52	30	42	9.01E+07	1.68E-02
			948.5754	977.053	106398.300	2	4	2.74E+07	7.38E-03
			947.8750	977.053	106476.200	2	2	6.90E+07	9.30E-03
			947.5468	862.613	106398.300	4	4	5.05E+07	6.80E-03
			946.8479	862.613	106476.200	4	2	1.97E+07	1.32E-03
			945.8083	862.613	106592.280	4	6	4.28E+07	8.60E-03
			945.7998	667.683	106398.300	6	4	1.07E+07	9.55E-04
			945.0877	667.683	106477.974	6	8	5.76E+07	1.03E-02
			944.0678	667.683	106592.280	6	6	4.15E+07	5.54E-03
			942.5676	384.790	106477.974	8	8	3.06E+07	4.08E-03
			941.5532	384.790	106592.280	8	6	5.14E+06	5.13E-04
			941.2667	384.790	106624.600	8	10	7.36E+07	1.22E-02
			939.1614	0	106477.974	10	8	1.68E+06	1.78E-04
			937.8699	0	106624.600	10	10	1.68E+07	2.22E-03
			937.6515	0	106649.427	10	12	9.14E+07	1.45E-02
Fe II	$3d^6(^5D)4s - 3d^6(^5D)6p$	$^6D-^6D^o$	941.1409	416.299	106670.320	30	30	1.40E+08	1.87E-02
			943.9229	667.683	106608.536	6	8	4.47E+07	7.97E-03
			943.8278	862.613	106814.148	4	6	5.57E+07	1.12E-02
			943.6062	384.790	106361.208	8	10	2.58E+07	4.30E-03
			942.7991	977.053	107044.189	2	4	5.45E+07	1.45E-02
			942.0945	667.683	106814.148	6	6	2.40E+07	3.19E-03
			941.7830	862.613	107044.189	4	4	1.54E+06	2.05E-04
			941.4091	384.790	106608.536	8	8	6.28E+07	8.35E-03
			940.6746	977.053	107283.740	2	2	3.14E+07	4.16E-03
			940.1924	0	106361.208	10	10	1.15E+08	1.52E-02
			940.0572	667.683	107044.189	6	4	8.46E+07	7.47E-03
			939.6630	862.613	107283.740	4	2	1.10E+08	7.29E-03
			939.5904	384.790	106814.148	8	6	6.05E+07	6.00E-03
			938.0112	0	106608.536	10	8	3.28E+07	3.46E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe II	$3d^6(^5D)4s - 3d^6(^5D)6p$	$^6D-^6F^o$	935.7487	416.299	107282.594	30	42	1.64E+05	3.02E-05
			937.8395	977.053	107605.101	2	4	5.06E+04	1.33E-05
			937.1225	862.613	107572.252	4	6	7.85E+04	1.55E-05
			936.8341	862.613	107605.101	4	4	9.33E+04	1.23E-05
			936.8022	977.053	107723.176	2	2	1.28E+05	1.68E-05
			936.3991	667.683	107459.750	6	8	1.06E+05	1.85E-05
			936.0401	384.790	107217.824	8	10	1.34E+05	2.19E-05
			935.7989	862.613	107723.176	4	2	3.64E+04	2.39E-06
			935.5176	0	106892.694	10	12	1.64E+05	2.59E-05
			935.4137	667.683	107572.252	6	6	7.62E+04	9.99E-06
			935.1264	667.683	107605.101	6	4	1.98E+04	1.73E-06
			933.9252	384.790	107459.750	8	8	5.62E+04	7.35E-06
			932.9449	384.790	107572.252	8	6	9.45E+03	9.25E-07
			932.6807	0	107217.824	10	10	3.05E+04	3.98E-06
			930.5810	0	107459.750	10	8	3.09E+03	3.21E-07
Fe II	$3d^6(^5D)4s - 3d^6(^5D)6p$	$^6D-^6P^o$	934.3165	416.299	107446.406	30	18	6.22E+05	4.88E-05
			938.7080	667.683	107197.080	6	8	2.19E+04	3.86E-06
			937.5362	862.613	107525.159	4	6	7.38E+04	1.46E-05
			936.2219	384.790	107197.080	8	8	1.33E+05	1.75E-05
			935.8926	977.053	107826.916	2	4	1.86E+05	4.87E-05
			935.8260	667.683	107525.159	6	6	2.27E+05	2.98E-05
			934.8913	862.613	107826.916	4	4	2.61E+05	3.42E-05
			933.3550	384.790	107525.159	8	6	3.20E+05	3.14E-05
			933.1907	667.683	107826.916	6	4	1.75E+05	1.52E-05
			932.8612	0	107197.080	10	8	4.68E+05	4.89E-05
Fe II	$3d^6(^5D)4s - 3d^5(^4F)4s4p(^3P^o)$	$^6D-^6D^o$	928.5436	416.299	108111.836	30	30	2.85E+08	3.69E-02
			932.7069	977.053	108191.871	2	4	1.10E+08	2.87E-02
			932.2453	862.613	108130.516	4	6	1.13E+08	2.21E-02
			931.7124	862.613	108191.871	4	4	3.11E+06	4.04E-04
			930.5543	667.683	108130.516	6	6	4.86E+07	6.31E-03
			930.0233	667.683	108191.871	6	4	1.70E+08	1.47E-02
			929.6128	667.683	108239.351	6	8	9.14E+07	1.58E-02
			929.5250	384.790	107966.620	8	10	5.26E+07	8.52E-03
			928.1111	384.790	108130.516	8	6	1.22E+08	1.19E-02
			927.1745	384.790	108239.351	8	8	1.28E+08	1.65E-02
			926.2122	0	107966.620	10	10	2.33E+08	3.01E-02
			923.8784	0	108239.351	10	8	6.62E+07	6.83E-03
				977.053		2	2	6.30E+07	8.20E-03
				862.613		4	2	2.21E+08	1.44E-02
Fe III	$3d^6(4)-3d^5(^6S5)4p$	$^5D-^5P^o$	1125.7860	422.66	89249.49	25	15	6.97E+08	7.95E-02
			1131.9080	738.55	89084.95	5	7	1.96E+07	5.27E-03
			1131.1888	932.06	89334.63	3	5	6.19E+07	1.98E-02
			1130.3969	1027.00	89491.50	1	3	1.38E+08	7.92E-02
			1129.1851	932.06	89491.50	3	3	3.11E+08	5.94E-02
			1128.7181	738.55	89334.63	5	5	2.42E+08	4.62E-02
			1128.0424	435.80	89084.95	7	7	1.38E+08	2.64E-02
			1126.7231	738.55	89491.50	5	3	2.43E+08	2.78E-02
			1124.8742	435.80	89334.63	7	5	3.92E+08	5.31E-02
			1122.5241	0	89084.95	9	7	5.42E+08	7.97E-02
Fe III	$3d^6(4)-3d^5(^4G5)4p$	$^5D-^5F^o$	861.3208	422.66	116523.43	25	35	8.41E+08	1.31E-01
			864.0299	738.55	116475.29	5	7	5.74E+08	8.99E-02
			862.7341	1027.00	116937.57	1	3	3.91E+08	1.31E-01
			862.3208	932.06	116898.18	3	5	4.71E+08	8.75E-02
			862.0280	932.06	116937.57	3	3	3.93E+08	4.38E-02
			861.8339	435.80	116467.44	7	9	7.05E+08	1.01E-01
			861.7756	435.80	116475.29	7	7	2.53E+08	2.82E-02
			860.8843	738.55	116898.18	5	5	3.38E+08	3.76E-02
			860.5925	738.55	116937.57	5	3	5.64E+07	3.76E-03
			859.7227	0	116316.58	9	11	8.49E+08	1.15E-01
			858.6464	435.80	116898.18	7	5	3.41E+07	2.69E-03
			858.6091	0	116467.44	9	9	1.42E+08	1.57E-02
			858.5512	0	116475.29	9	7	1.22E+07	1.05E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe III	$3d^6(4)-3d^5(^4P_3)4p$	$^5D-^5D^o$	857.8652	422.66	116991.09	25	25	6.58E+06	7.26E-04
			866.9046	1027.00	116379.94	1	3	2.12E+06	7.18E-04
			866.3054	932.06	116364.79	3	1	6.37E+06	2.39E-04
			866.1917	932.06	116379.94	3	3	5.33E+05	5.99E-05
			865.8953	932.06	116419.46	3	5	2.24E+06	4.19E-04
			864.7423	738.55	116379.94	5	3	3.75E+06	2.52E-04
			864.4469	738.55	116419.46	5	5	1.61E+06	1.80E-04
			862.1904	435.80	116419.46	7	5	2.60E+06	2.07E-04
			859.6232	738.55	117068.59	5	7	1.86E+06	2.89E-04
			857.3918	435.80	117068.59	7	7	3.29E+06	3.63E-04
			854.2001	0	117068.59	9	7	1.43E+06	1.22E-04
			854.0739	435.80	117521.68	7	9	1.11E+06	1.56E-04
			850.9068	0	117521.68	9	9	5.61E+06	6.09E-04
Fe III	$3d^6(4)-3d^5(^4P_3)4p$	$^5D-^5P^o$	846.6942	422.66	118529.06	25	15	1.06E+09	6.82E-02
			851.0063	738.55	118246.49	5	7	2.97E+07	4.52E-03
			848.9730	932.06	118721.44	3	5	9.44E+07	1.70E-02
			848.8194	435.80	118246.49	7	7	2.10E+08	2.27E-02
			848.6028	1027.00	118867.76	1	3	2.10E+08	6.80E-02
			847.9197	932.06	118867.76	3	3	4.74E+08	5.11E-02
			847.5805	738.55	118721.44	5	5	3.70E+08	3.98E-02
			846.5307	738.55	118867.76	5	3	3.69E+08	2.38E-02
			845.6911	0	118246.49	9	7	8.19E+08	6.83E-02
			845.4112	435.80	118721.44	7	5	5.94E+08	4.55E-02
Fe III	$3d^6(4)-3d^5(^4D_5)4p$	$^5D-^5F^o$	828.2412	422.66	121160.44	25	35	1.27E+08	1.83E-02
			835.6294	1027.00	120697.27	1	3	5.76E+07	1.81E-02
			834.9670	932.06	120697.27	3	3	5.78E+07	6.04E-03
			834.0703	932.06	120826.03	3	5	6.96E+07	1.21E-02
			833.6201	738.55	120697.27	5	3	8.29E+06	5.18E-04
			832.7263	738.55	120826.03	5	5	4.99E+07	5.19E-03
			831.4615	738.55	121008.70	5	7	8.61E+07	1.25E-02
			830.6322	435.80	120826.03	7	5	5.02E+06	3.71E-04
			829.3738	435.80	121008.70	7	7	3.79E+07	3.91E-03
			827.7742	435.80	121241.69	7	9	1.06E+08	1.40E-02
			826.3869	0	121008.70	9	7	1.82E+06	1.45E-04
			824.7988	0	121241.69	9	9	2.15E+07	2.19E-03
			823.2563	0	121468.85	9	11	1.30E+08	1.61E-02
Fe III	$3d^6(4)-3d^5(^4D_5)4p$	$^5D-^5D^o$	816.7636	422.66	122857.11	25	25	8.29E+08	8.29E-02
			821.7184	932.06	122628.25	3	5	2.85E+08	4.81E-02
			820.9100	1027.00	122843.04	1	3	2.72E+08	8.25E-02
			820.4139	738.55	122628.25	5	5	2.04E+08	2.06E-02
			820.2707	932.06	122843.04	3	3	6.82E+07	6.88E-03
			819.0619	738.55	122829.45	5	7	2.34E+08	3.30E-02
			818.9707	738.55	122843.04	5	3	4.81E+08	2.90E-02
			818.3812	435.80	122628.25	7	5	3.29E+08	2.36E-02
			817.0359	435.80	122829.45	7	7	4.14E+08	4.14E-02
			816.2722	435.80	122943.95	7	9	1.39E+08	1.78E-02
			816.1694	932.06	123455.64	3	1	8.32E+08	2.77E-02
			814.1370	0	122829.45	9	7	1.79E+08	1.38E-02
			813.3788	0	122943.95	9	9	7.00E+08	6.94E-02
Fe III	$3d^6(4)-3d^5(^4D_5)4p$	$^5D-^5P^o$	811.2247	422.66	123693.07	25	15	3.83E+07	2.27E-03
			816.1548	1027.00	123552.78	1	3	7.51E+06	2.25E-03
			815.5229	932.06	123552.78	3	3	1.69E+07	1.69E-03
			814.5651	932.06	123696.95	3	5	3.40E+06	5.64E-04
			814.2379	738.55	123552.78	5	3	1.32E+07	7.90E-04
			813.2832	738.55	123696.95	5	5	1.33E+07	1.32E-03
			812.9297	738.55	123750.42	5	7	1.09E+06	1.51E-04
			811.2856	435.80	123696.95	7	5	2.14E+07	1.51E-03
			810.9339	435.80	123750.42	7	7	7.66E+06	7.55E-04
			808.0781	0	123750.42	9	7	2.99E+07	2.28E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe III	$3d^6(4)-3d^5(^4F3)4p$	$^5D-^5F^o$	736.9664	422.66	136114.06	25	35	1.32E+08	1.50E-02
			739.7240	932.06	136117.61	3	5	7.31E+07	1.00E-02
			739.2617	738.55	136008.65	5	7	8.98E+07	1.03E-02
			738.6667	738.55	136117.61	5	5	5.24E+07	4.29E-03
			738.3475	1027.00	136464.58	1	3	6.12E+07	1.50E-02
			737.8303	932.06	136464.58	3	3	6.14E+07	5.01E-03
			737.7085	435.80	135990.70	7	9	1.11E+08	1.16E-02
			737.6108	435.80	136008.65	7	7	3.95E+07	3.22E-03
			737.0185	435.80	136117.61	7	5	5.28E+06	3.07E-04
			736.7783	738.55	136464.58	5	3	8.83E+06	4.31E-04
			735.3444	0	135990.70	9	9	2.22E+07	1.80E-03
			735.2474	0	136008.65	9	7	1.90E+06	1.20E-04
			734.2961	0	136184.85	9	11	1.34E+08	1.32E-02
Fe III	$3d^6(4)-3d^5(^4F3)4p$	$^5D-^5D^o$	730.0857	422.66	137392.88	25	25	5.81E+08	4.64E-02
			732.4192	1027.00	137560.84	1	3	1.91E+08	4.62E-02
			731.9984	932.06	137544.38	3	5	2.02E+08	2.70E-02
			731.9102	932.06	137560.84	3	3	4.79E+07	3.85E-03
			731.8454	932.06	137572.94	3	1	5.75E+08	1.54E-02
			731.6140	738.55	137422.64	5	7	1.65E+08	1.85E-02
			731.1343	435.80	137209.57	7	9	9.62E+07	9.91E-03
			730.9630	738.55	137544.38	5	5	1.45E+08	1.16E-02
			730.8751	738.55	137560.84	5	3	3.37E+08	1.62E-02
			729.9971	435.80	137422.64	7	7	2.90E+08	2.32E-02
			729.3490	435.80	137544.38	7	5	2.33E+08	1.33E-02
			728.8121	0	137209.57	9	9	4.86E+08	3.87E-02
			727.6821	0	137422.64	9	7	1.26E+08	7.75E-03
Fe III	$3d^6(4)-3d^5(^6S5)5p$	$^5D-^5P^o$	595.3551	422.66	168389.65	25	15	3.42E+08	1.09E-02
			597.1919	1027.00	168477.36	1	3	6.73E+07	1.08E-02
			597.0544	932.06	168420.99	3	5	3.03E+07	2.70E-03
			596.8535	932.06	168477.36	3	3	1.52E+08	8.11E-03
			596.6903	738.55	168329.67	5	7	9.63E+06	7.20E-04
			596.3654	738.55	168420.99	5	5	1.18E+08	6.31E-03
			596.1650	738.55	168477.36	5	3	1.19E+08	3.79E-03
			595.6144	435.80	168329.67	7	7	6.79E+07	3.61E-03
			595.2906	435.80	168420.99	7	5	1.90E+08	7.22E-03
			594.0723	0	168329.67	9	7	2.65E+08	1.09E-02
Fe III	$3d^6(4)-3d^5(^6S5)4f$	$^5D-^5F^o$	542.4271	422.66	184779.2	25	35	1.05E+09	6.49E-02
			544.2168	1027.00	184777.3	1	3	4.86E+08	6.47E-02
			543.9358	932.06	184777.3	3	3	4.87E+08	2.16E-02
			543.9349	932.06	184777.6	3	5	5.83E+08	4.31E-02
			543.3638	738.55	184777.3	5	3	6.97E+07	1.85E-03
			543.3629	738.55	184777.6	5	5	4.18E+08	1.85E-02
			543.3603	738.55	184778.5	5	7	7.16E+08	4.44E-02
			542.4706	435.80	184777.6	7	5	4.19E+07	1.32E-03
			542.4679	435.80	184778.5	7	7	3.15E+08	1.39E-02
			542.4650	435.80	184779.5	7	9	8.74E+08	4.96E-02
			541.1885	0	184778.5	9	7	1.51E+07	5.17E-04
			541.1856	0	184779.5	9	9	1.76E+08	7.75E-03
			541.1818	0	184780.8	9	11	1.06E+09	5.68E-02
Fe III	$3d^6(4)-3d^5(^4G5)5p$	$^5D-^5F^o$	503.0195	422.66	199222.10	25	35	2.54E+08	1.35E-02
			504.2840	1027.00	199327.95	1	3	1.18E+08	1.35E-02
			504.1133	932.06	199300.15	3	5	1.41E+08	8.96E-03
			504.0427	932.06	199327.95	3	3	1.17E+08	4.47E-03
			503.7177	738.55	199262.44	5	7	1.73E+08	9.22E-03
			503.6220	738.55	199300.15	5	5	1.01E+08	3.85E-03
			503.5515	738.55	199327.95	5	3	1.69E+07	3.85E-04
			503.0765	435.80	199212.72	7	9	2.11E+08	1.03E-02
			502.9507	435.80	199262.44	7	7	7.59E+07	2.88E-03
			502.8553	435.80	199300.15	7	5	1.01E+07	2.74E-04
			502.1599	0	199139.76	9	11	2.53E+08	1.17E-02
			501.9760	0	199212.72	9	9	4.26E+07	1.61E-03
			501.8507	0	199262.44	9	7	3.64E+06	1.07E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe III	$3d^6(4)-3d^5(^4P3)5p$	$^5D-^5D^o$	<i>498.1083</i>	<i>422.66</i>	<i>201182.21</i>	25	25	2.52E+07	9.39E-04
			499.6228	1027.00	201178.01	1	3	8.34E+06	9.36E-04
			499.4203	932.06	201164.21	3	5	8.76E+06	5.46E-04
			499.4056	932.06	201170.10	3	1	2.50E+07	3.12E-04
			499.3859	932.06	201178.01	3	3	2.09E+06	7.80E-05
			498.9381	738.55	201164.21	5	5	6.27E+06	2.34E-04
			498.9328	738.55	201166.35	5	7	7.18E+06	3.75E-04
			498.9038	738.55	201178.01	5	3	1.46E+07	3.28E-04
			498.1856	435.80	201164.21	7	5	1.01E+07	2.68E-04
			498.1803	435.80	201166.35	7	7	1.26E+07	4.69E-04
			498.0787	435.80	201207.29	7	9	4.20E+06	2.01E-04
			497.1010	0	201166.35	9	7	5.45E+06	1.57E-04
			496.9999	0	201207.29	9	9	2.12E+07	7.84E-04
Fe III	$3d^6(4)-3d^5(^4P3)5p$	$^5D-^5P^o$	<i>495.4616</i>	<i>422.66</i>	<i>202254.67</i>	25	15	2.75E+08	6.08E-03
			496.7528	1027.00	202334.39	1	3	5.46E+07	6.06E-03
			496.6462	932.06	202282.65	3	5	2.47E+07	1.52E-03
			496.5186	932.06	202334.39	3	3	1.23E+08	4.55E-03
			496.3716	738.55	202200.51	5	7	7.83E+06	4.05E-04
			496.1693	738.55	202282.65	5	5	9.59E+07	3.54E-03
			496.0420	738.55	202334.39	5	3	9.62E+07	2.13E-03
			495.6268	435.80	202200.51	7	7	5.51E+07	2.03E-03
			495.4251	435.80	202282.65	7	5	1.54E+08	4.05E-03
			494.5586	0	202200.51	9	7	2.14E+08	6.09E-03
Fe III	$3d^6(4)-3d^5(^4D5)5p$	$^5D-^5F^o$	<i>488.6466</i>	<i>422.66</i>	<i>205069.55</i>	25	35	6.64E+05	3.33E-05
			490.4843	1027.00	204907.13	1	3	3.06E+05	3.31E-05
			490.2560	932.06	204907.13	3	3	3.05E+05	1.10E-05
			490.1692	932.06	204943.26	3	5	3.66E+05	2.20E-05
			489.7913	738.55	204907.13	5	3	4.39E+04	9.48E-07
			489.7047	738.55	204943.26	5	5	2.64E+05	9.48E-06
			489.5627	738.55	205002.47	5	7	4.51E+05	2.27E-05
			488.9797	435.80	204943.26	7	5	2.65E+04	6.78E-07
			488.8382	435.80	205002.47	7	7	1.98E+05	7.11E-06
			488.6231	435.80	205092.53	7	9	5.54E+05	2.55E-05
			487.7990	0	205002.47	9	7	9.51E+03	2.64E-07
			487.5848	0	205092.53	9	9	1.11E+05	3.97E-06
			487.3410	0	205195.15	9	11	6.69E+05	2.91E-05
Fe III	$3d^6(4)-3d^5(^4D5)5p$	$^5D-^5D^o$	<i>487.1315</i>	<i>422.66</i>	<i>205706.02</i>	25	25	1.92E+08	6.83E-03
			488.5983	1027.00	205694.09	1	3	6.34E+07	6.81E-03
			488.3718	932.06	205694.09	3	3	1.59E+07	5.68E-04
			488.2683	932.06	205737.51	3	5	6.68E+07	3.98E-03
			487.9107	738.55	205694.09	5	3	1.12E+08	2.39E-03
			487.8196	738.55	205732.37	5	7	5.47E+07	2.73E-03
			487.8074	738.55	205737.51	5	5	4.79E+07	1.71E-03
			487.2435	435.80	205672.01	7	9	3.21E+07	1.47E-03
			487.1002	435.80	205732.37	7	7	9.61E+07	3.42E-03
			487.0880	435.80	205737.51	7	5	7.67E+07	1.95E-03
			486.2110	0	205672.01	9	9	1.61E+08	5.70E-03
			486.0684	0	205732.37	9	7	4.14E+07	1.14E-03
				932.06		3	1	1.82E+08	2.16E-03
Fe III	$3d^6(4)-3d^5(^6S5)5f$	$^5D-^5F^o$	<i>483.4579</i>	<i>422.66</i>	<i>207265.9</i>	25	35	7.52E+08	3.69E-02
			484.9061	1027.00	207252.5	1	3	3.48E+08	3.68E-02
			484.6830	932.06	207252.5	3	3	3.49E+08	1.23E-02
			484.6705	932.06	207257.8	3	5	4.19E+08	2.46E-02
			484.2288	738.55	207252.5	5	3	4.98E+07	1.05E-03
			484.2164	738.55	207257.8	5	5	2.99E+08	1.05E-02
			484.2042	738.55	207263	5	7	5.14E+08	2.53E-02
			483.5076	435.80	207257.8	7	5	3.01E+07	7.53E-04
			483.4954	435.80	207263	7	7	2.26E+08	7.92E-03
			483.4832	435.80	207268.2	7	9	6.26E+08	2.82E-02
			482.4788	0	207263	9	7	1.08E+07	2.93E-04
			482.4667	0	207268.2	9	9	1.26E+08	4.40E-03
			482.4550	0	207273.23	9	11	7.57E+08	3.23E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe III	$3d^6(4) - 3d^5(^4F3)5p$	$^5D - ^5F^o$	456.4129	422.66	219522.54	25	35	1.07E+08	4.69E-03
			457.2138	1027.00	219743.04	1	3	4.98E+07	4.68E-03
			457.1983	932.06	219655.55	3	5	5.97E+07	3.12E-03
			457.0155	932.06	219743.04	3	3	4.98E+07	1.56E-03
			456.9809	738.55	219566.08	5	7	7.32E+07	3.21E-03
			456.7941	738.55	219655.55	5	5	4.28E+07	1.34E-03
			456.6116	738.55	219743.04	5	3	7.14E+06	1.34E-04
			456.5456	435.80	219471.97	7	9	8.94E+07	3.59E-03
			456.3495	435.80	219566.08	7	7	3.20E+07	1.00E-03
			456.1633	435.80	219655.55	7	5	4.30E+06	9.58E-05
			455.7561	0	219415.61	9	11	1.08E+08	4.11E-03
			455.6391	0	219471.97	9	9	1.80E+07	5.60E-04
			455.4438	0	219566.08	9	7	1.54E+06	3.73E-05
Fe IV	$3d^5(5) - 3d^4(^5D4)4p$	$^6S - ^6P^o$	526.0996	0	190078.06	6	18	3.31E+09	4.12E-01
			526.6342	0	189885.11	6	4	3.30E+09	9.14E-02
			526.2929	0	190008.28	6	6	3.32E+09	1.38E-01
			525.6881	0	190226.87	6	8	3.31E+09	1.83E-01
Fe V	$3d^4(4) - 3d^3(^4F3)4p$	$^5D - ^5D^o$	387.5296	787.2	258832.0	25	25	7.68E+09	1.73E-01
			388.6130	803.1	258128.5	7	5	3.04E+09	4.91E-02
			388.5046	1282.8	258680.0	9	7	1.63E+09	2.87E-02
			388.0313	417.3	258128.5	5	5	1.90E+09	4.30E-02
			387.7819	803.1	258680.0	7	7	3.82E+09	8.62E-02
			387.6173	142.1	258128.5	3	5	2.69E+09	1.01E-01
			387.5038	1282.8	259344.8	9	9	6.35E+09	1.43E-01
			387.2026	417.3	258680.0	5	7	2.19E+09	6.90E-02
			386.8858	417.3	258891.5	5	3	4.49E+09	6.05E-02
			386.8810	142.1	258619.5	3	1	7.69E+09	5.75E-02
			386.7848	803.1	259344.8	7	9	1.28E+09	3.70E-02
			386.4743	142.1	258891.5	3	3	6.43E+08	1.44E-02
			386.2622	0	258891.5	1	3	2.58E+09	1.73E-01
Fe V	$3d^4(4) - 3d^3(^4F3)4p$	$^5D - ^5F^o$	385.1879	787.2	260400.7	25	35	2.61E+09	8.13E-02
			386.7380	803.1	259376.1	7	5	1.03E+08	1.65E-03
			386.5901	1282.8	259954.7	9	7	3.68E+07	6.42E-04
			386.1618	417.3	259376.1	5	5	1.04E+09	2.32E-02
			385.8745	803.1	259954.7	7	7	7.79E+08	1.74E-02
			385.7519	142.1	259376.1	3	5	1.45E+09	5.41E-02
			385.7456	1282.8	260521.0	9	9	4.33E+08	9.66E-03
			385.3009	417.3	259954.7	5	7	1.79E+09	5.57E-02
			385.0331	803.1	260521.0	7	9	2.18E+09	6.22E-02
			384.9573	1282.8	261051.9	9	11	2.61E+09	7.10E-02
				0		1	3	1.20E+09	8.04E-02
				142.1		3	3	1.20E+09	2.68E-02
				417.3		5	3	1.72E+08	2.30E-03
Fe V	$3d^4(4) - 3d^3(^4P3)4p$	$^5D - ^5P^o$	365.4691	787.2	274408.1	25	15	6.40E+09	7.69E-02
			365.9976	417.3	273643.1	5	3	2.23E+09	2.69E-02
			365.8541	803.1	274136.1	7	5	3.57E+09	5.12E-02
			365.6294	142.1	273643.1	3	3	2.87E+09	5.76E-02
			365.4395	0	273643.1	1	3	1.28E+09	7.69E-02
			365.4336	1282.8	274930.3	9	7	4.94E+09	7.69E-02
			365.3384	417.3	274136.1	5	5	2.24E+09	4.48E-02
			364.9715	142.1	274136.1	3	5	5.77E+08	1.92E-02
			364.7942	803.1	274930.3	7	7	1.28E+09	2.56E-02
			364.2815	417.3	274930.3	5	7	1.85E+08	5.14E-03
Fe V	$3d^4(4) - 3d^3(^4P3)4p$	$^5D - ^5D^o$	361.9794	787.2	277046.0	25	25	2.24E+08	4.40E-03
			364.1512	142.1	274753.3	3	1	2.20E+08	1.46E-03
			363.9947	417.3	275146.6	5	3	1.29E+08	1.54E-03
			363.6304	142.1	275146.6	3	3	1.84E+07	3.65E-04
			363.4426	0	275146.6	1	3	7.39E+07	4.39E-03
			362.6004	1282.8	277068.5	9	7	4.78E+07	7.33E-04
			362.3765	803.1	276759.2	7	5	8.96E+07	1.26E-03
			361.9708	803.1	277068.5	7	7	1.12E+08	2.20E-03
			361.8706	417.3	276759.2	5	5	5.60E+07	1.10E-03
			361.5106	142.1	276759.2	3	5	7.87E+07	2.57E-03
			361.4660	417.3	277068.5	5	7	6.42E+07	1.76E-03
			361.2808	1282.8	278075.8	9	9	1.88E+08	3.67E-03
			360.6558	803.1	278075.8	7	9	3.78E+07	9.47E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe VI	$3d^3(3)-3d^2(^3F)4p$	$^4F-^4G^\circ$	294.4645	1163.6	340763.1	28	36	1.20E+09	2.01E-02
			296.6760	1188.3	338256.4	8	6	5.99E+06	5.93E-05
			296.3170	2000.6	339477.0	10	8	3.51E+06	3.70E-05
			296.0813	511.3	338256.4	6	6	1.63E+08	2.14E-03
			295.6337	0	338256.4	4	6	1.02E+09	2.00E-02
			295.6055	1188.3	339477.0	8	8	1.61E+08	2.11E-03
			295.0423	2000.6	340935.0	10	10	9.88E+07	1.29E-03
			295.0151	511.3	339477.0	6	8	1.03E+09	1.79E-02
			294.3369	1188.3	340935.0	8	10	1.10E+09	1.79E-02
			293.4875	2000.6	342730.6	10	12	1.21E+09	1.88E-02
Fe VI	$3d^3(3)-3d^2(^3F)4p$	$^4F-^4F^\circ$	294.0278	1163.6	341267.5	28	28	1.09E+10	1.41E-01
			294.9605	511.3	339539.8	6	4	2.15E+09	1.87E-02
			294.8498	1188.3	340344.0	8	6	1.92E+09	1.88E-02
			294.6682	2000.6	341365.3	10	8	1.12E+09	1.17E-02
			294.5163	0	339539.8	4	4	8.61E+09	1.12E-01
			294.2624	511.3	340344.0	6	6	7.45E+09	9.67E-02
			293.9646	1188.3	341365.3	8	8	8.34E+09	1.08E-01
			293.8204	0	340344.0	4	6	1.45E+09	2.82E-02
			293.7429	2000.6	342434.4	10	10	9.97E+09	1.29E-01
			293.3807	511.3	341365.3	6	8	1.46E+09	2.52E-02
			293.0436	1188.3	342434.4	8	10	9.13E+08	1.47E-02
Fe VI	$3d^3(3)-3d^2(^3F)4p$	$^4F-^4D^\circ$	291.2976	1163.6	344455.1	28	20	1.01E+10	9.22E-02
			291.8007	511.3	343210.9	6	4	8.07E+09	6.87E-02
			291.4730	1188.3	344273.3	8	6	8.27E+09	7.90E-02
			291.3660	0	343210.9	4	4	2.03E+09	2.58E-02
			291.1869	2000.6	345422.6	10	8	9.08E+09	9.23E-02
			291.0197	0	343619.3	4	2	1.02E+10	6.46E-02
			290.8989	511.3	344273.3	6	6	1.77E+09	2.25E-02
			290.4998	1188.3	345422.6	8	8	1.04E+09	1.32E-02
			290.4669	0	344273.3	4	6	9.75E+07	1.85E-03
			289.9296	511.3	345422.6	6	8	5.25E+07	8.82E-04
Fe VI	$3d^3(3)-3d^2(^3P)4p$	$^4F-^4D^\circ$	277.8917	1163.6	361016.0	28	20	3.68E+09	3.04E-02
			278.3422	511.3	359781.3	6	4	2.93E+09	2.27E-02
			278.2447	0	359395.9	4	2	3.67E+09	2.13E-02
			278.1496	1188.3	360707.1	8	6	3.00E+09	2.61E-02
			277.9466	0	359781.3	4	4	7.36E+08	8.52E-03
			277.6268	511.3	360707.1	6	6	6.42E+08	7.42E-03
			277.5701	2000.6	362270.0	10	8	3.30E+09	3.05E-02
			277.2332	0	360707.1	4	6	3.53E+07	6.10E-04
			276.9456	1188.3	362270.0	8	8	3.79E+08	4.36E-03
			276.4274	511.3	362270.0	6	8	1.91E+07	2.91E-04
Fe VI	$3d^3(3)-3p^53d^4(^5D4)$	$^4F-^4D^\circ$	165.530	1163.6	605285	28	20	1.69E+11	4.97E-01
			165.780	0	603210	4	2	1.69E+11	3.48E-01
			165.640	511.3	604230	6	4	1.35E+11	3.71E-01
			165.500	2000.6	606230	10	8	1.51E+11	4.97E-01
			165.500	0	604230	4	4	3.38E+10	1.39E-01
			165.499	1188.3	605420	8	6	1.38E+11	4.26E-01
			165.314	511.3	605420	6	6	2.95E+10	1.21E-01
			165.278	1188.3	606230	8	8	1.74E+10	7.11E-02
			165.175	0	605420	4	6	1.62E+09	9.96E-03
			165.093	511.3	606230	6	8	8.72E+08	4.75E-03
Fe VII	$3p^63d^2-3p^63d4p$	$^3F-^3D^\circ$	233.9837	1349.7	428730.0	21	15	2.01E+10	1.18E-01
			235.2229	0	425128.6	5	3	1.99E+10	9.88E-02
			234.3385	1051.5	427784.7	7	5	1.79E+10	1.05E-01
			233.7625	0	427784.7	5	5	2.25E+09	1.84E-02
			233.3085	2331.5	430948.6	9	7	1.86E+10	1.18E-01
			232.6138	1051.5	430948.6	7	7	1.63E+09	1.32E-02
			232.0462	0	430948.6	5	7	4.69E+07	5.30E-04
Fe VII	$3p^63d^2-3p^63d4p$	$^3F-^3F^\circ$	232.0742	1349.7	432246.4	21	21	7.93E+09	6.40E-02
			233.0123	1051.5	430213.4	7	5	8.72E+08	5.07E-03
			232.9493	2331.5	431609.5	9	7	6.31E+08	3.99E-03
			232.4428	0	430213.4	5	5	7.01E+09	5.68E-02
			232.2567	1051.5	431609.5	7	7	6.65E+09	5.38E-02
			231.7284	2331.5	433871.2	9	9	7.47E+09	6.01E-02
			231.6909	0	431609.5	5	7	6.33E+08	7.13E-03
			231.0431	1051.5	433871.2	7	9	5.02E+08	5.17E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe VII	$3p^6 3d^2 - 3p^5 3d^3$	$^3F - ^3G^\circ$	211.137	1349.7	474975	21	27	1.28E+09	1.10E-02
			212.663	2331.5	472559	9	11	1.25E+09	1.04E-02
			212.508	2331.5	472903	9	9	7.84E+07	5.31E-04
			211.931	1051.5	472903	7	9	1.19E+09	1.03E-02
			208.723	2331.5	481435	9	7	1.69E+06	8.60E-06
			208.167	1051.5	481435	7	7	1.08E+08	6.99E-04
			207.712	0	481435	5	7	1.24E+09	1.12E-02
Fe VII	$3p^6 3d^2 - 3p^5 3d^3$	$^3F - ^3G^\circ$	195.921	1349.7	511759	21	27	1.02E+08	7.56E-04
			196.946	2331.5	510086	9	7	1.28E+05	5.80E-07
			196.918	2331.5	510158	9	9	6.28E+06	3.65E-05
			196.450	1051.5	510086	7	7	8.12E+06	4.70E-05
			196.423	1051.5	510158	7	9	9.49E+07	7.06E-04
			196.045	0	510086	5	7	9.36E+07	7.55E-04
			195.388	2331.5	514133	9	11	1.03E+08	7.20E-04
Fe VII	$3p^6 3d^2 - 3p^5 3d^3$	$^3F - ^3D^\circ$	182.200	1349.7	550196	21	15	9.76E+08	3.47E-03
			182.741	1051.5	548274	7	5	8.61E+08	3.08E-03
			182.391	0	548274	5	5	1.08E+08	5.39E-04
			182.071	2331.5	551568	9	7	8.98E+08	3.47E-03
			181.648	1051.5	551568	7	7	7.80E+07	3.86E-04
			181.301	0	551568	5	7	2.25E+06	1.55E-05
				0		5	3	8.17E+08	2.44E-03
Fe VII	$3p^6 3d^2 - 3p^5 3d^3$	$^3F - ^3F^\circ$	176.907	1349.7	566618	21	21	1.48E+08	6.93E-04
			177.502	1051.5	564425	7	5	1.62E+07	5.48E-05
			177.329	2331.5	566256	9	7	1.18E+07	4.32E-05
			177.171	0	564425	5	5	1.31E+08	6.15E-04
			176.927	1051.5	566256	7	7	1.24E+08	5.82E-04
			176.745	2331.5	568118	9	9	1.39E+08	6.50E-04
			176.599	0	566256	5	7	1.18E+07	7.71E-05
Fe VII	$3p^6 3d^2 - 3p^5 3d^3$	$^3F - ^3D^\circ$	176.346	1051.5	568118	7	9	9.33E+06	5.59E-05
Fe VII	$3p^6 3d^2 - 3p^5 3d^3$	$^3F - ^3D^\circ$	166.016	1349.7	603702	21	15	6.30E+08	1.86E-03
			166.365	2331.5	603419	9	7	5.76E+08	1.86E-03
			166.012	1051.5	603419	7	7	4.99E+07	2.06E-04
			165.919	1051.5	603757	7	5	5.60E+08	1.65E-03
			165.722	0	603419	5	7	1.43E+06	8.27E-06
			165.630	0	603757	5	5	7.05E+07	2.90E-04
			165.489	0	604270	5	3	6.37E+08	1.57E-03
Fe VII	$3p^6 3d^2 - 3p^6 3d4f$	$^3F - ^3F^\circ$	151.682	1349.7	660624	21	21	1.34E+11	4.61E-01
			151.970	2331.5	660358	9	7	1.07E+10	2.88E-02
			151.782	2331.5	661169	9	9	1.25E+11	4.33E-01
			151.753	1051.5	660015	7	5	1.48E+10	3.66E-02
			151.674	1051.5	660358	7	7	1.12E+11	3.88E-01
			151.512	0	660015	5	5	1.19E+11	4.11E-01
			151.488	1051.5	661169	7	9	8.41E+09	3.72E-02
Fe VII	$3p^6 3d^2 - 3p^6 3d4f$	$^3F - ^3G^\circ$	151.433	0	660358	5	7	1.07E+10	5.14E-02
Fe VII	$3p^6 3d^2 - 3p^6 3d4f$	$^3F - ^3G^\circ$	150.922	1349.7	663946	21	27	1.50E+11	6.58E-01
			151.340	2331.5	663097	9	7	1.90E+08	5.07E-04
			151.145	2331.5	663950	9	9	9.31E+09	3.19E-02
			151.047	1051.5	663097	7	7	1.20E+10	4.12E-02
			151.023	2331.5	664482	9	11	1.50E+11	6.26E-01
			150.853	1051.5	663950	7	9	1.41E+11	6.18E-01
			150.807	0	663097	5	7	1.38E+11	6.59E-01
Fe VII	$3p^6 3d^2 - 3p^6 3d4f$	$^3F - ^3D^\circ$							
			150.400	1349.7	666245	21	15	5.70E+08	1.38E-03
			150.530	2331.5	666651	9	7	5.22E+08	1.38E-03
			150.405	1051.5	665923	7	5	5.08E+08	1.23E-03
			150.240	1051.5	666651	7	7	4.55E+07	1.54E-04
			150.188	0	665832	5	3	5.77E+08	1.17E-03
			150.168	0	665923	5	5	6.39E+07	2.16E-04
Fe VII	$3p^6 3d^2 - 3p^6 3d4f$	$^3F - ^3D^\circ$	150.004	0	666651	5	7	1.31E+06	6.17E-06



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s$	$^3F - ^3D^o$	133.984	1349.7	747710	21	15	1.31E+10	2.51E-02
			134.128	0	745556	5	3	1.30E+10	2.11E-02
			134.064	1051.5	746965	7	5	1.16E+10	2.23E-02
			133.898	2331.5	749166	9	7	1.20E+10	2.51E-02
			133.875	0	746965	5	5	1.46E+09	3.91E-03
			133.669	1051.5	749166	7	7	1.05E+09	2.80E-03
			133.482	0	749166	5	7	2.99E+07	1.12E-04
Fe VII	$3p^6 3d^2 - 3p^6 3d5f^*$	$^3F - ^3G^o$	130.374	1349.7	768376	21	27	8.03E+10	2.63E-01
			130.777	2331.5	766991	9	11	7.98E+10	2.50E-01
			130.466	2331.5	768813	9	9	5.02E+09	1.28E-02
			130.266	2331.5	769991	9	7	1.03E+08	2.04E-04
			130.249	1051.5	768813	7	9	7.55E+10	2.47E-01
			130.049	1051.5	769991	7	7	6.51E+09	1.65E-02
			129.872	0	769991	5	7	7.46E+10	2.64E-01
Fe VII	$3p^6 3d^2 - 3p^6 3d5f^*$	$^3F - ^3F^o$	128.581	1349.7	779070	21	21	4.88E+10	1.21E-01
			128.851	2331.5	778420	9	7	3.90E+09	7.55E-03
			128.660	2331.5	779575	9	9	4.55E+10	1.13E-01
			128.639	1051.5	778420	7	7	4.11E+10	1.02E-01
			128.465	0	778420	5	7	3.90E+09	1.35E-02
			128.448	1051.5	779575	7	9	3.06E+09	9.74E-03
				0		5	5	4.44E+10	1.10E-01
Fe VII	$3p^6 3d^2 - 3p^6 3d6p^*$	$^3F - ^3F^o$		1051.5		7	5	5.55E+09	9.83E-03
			127.954	1349.7	782878	21	21	6.31E+08	1.55E-03
			128.146	2331.5	782690	9	9	5.89E+08	1.45E-03
			128.076	2331.5	783119	9	7	5.08E+07	9.71E-05
			127.936	1051.5	782690	7	9	3.93E+07	1.24E-04
			127.866	1051.5	783119	7	7	5.30E+08	1.30E-03
			127.695	0	783119	5	7	5.05E+07	1.73E-04
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s^*$	$^3F - ^3F^o$		0		5	5	5.83E+08	1.43E-03
				1051.5		7	5	7.30E+07	1.28E-04
			127.561	1349.7	785287	21	21	1.62E+08	3.96E-04
			127.766	2331.5	785012	9	7	1.30E+07	2.48E-05
			127.636	2331.5	785809	9	9	1.52E+08	3.72E-04
			127.603	1051.5	784733	7	5	1.80E+07	3.14E-05
			127.557	1051.5	785012	7	7	1.37E+08	3.34E-04
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s^*$	$^3F - ^3G^o$	127.432	0	784733	5	5	1.45E+08	3.52E-04
			127.428	1051.5	785809	7	9	1.02E+07	3.19E-05
			127.387	0	785012	5	7	1.29E+07	4.41E-05
			127.179	1349.7	787643	21	27	3.78E+10	1.18E-01
			127.486	2331.5	786732	9	7	4.80E+07	9.10E-05
			127.323	2331.5	787737	9	9	2.36E+09	5.74E-03
			127.278	1051.5	786732	7	7	3.04E+09	7.38E-03
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s^*$	$^3F - ^3G^o$	127.256	2331.5	788146	9	11	3.77E+10	1.12E-01
			127.116	1051.5	787737	7	9	3.53E+10	1.10E-01
			127.108	0	786732	5	7	3.48E+10	1.18E-01
			127.099	1349.7	788140	21	15	3.77E+09	6.52E-03
			127.231	2331.5	788303	9	7	3.45E+09	6.51E-03
			127.068	1051.5	788030	7	5	3.35E+09	5.79E-03
			127.024	1051.5	788303	7	7	3.00E+08	7.25E-04
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s^*$	$^3F - ^3D^o$	126.912	0	787945	5	3	3.78E+09	5.48E-03
			126.899	0	788030	5	5	4.22E+08	1.02E-03
			126.855	0	788303	5	7	8.59E+06	2.90E-05
			125.529	1349.7	797978	21	27	1.39E+10	4.22E-02
			126.292	2331.5	794149	9	7	1.74E+07	3.23E-05
			126.088	1051.5	794149	7	7	1.10E+09	2.62E-03
			125.921	0	794149	5	7	1.26E+10	4.21E-02
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s$	$^3F - ^3G^o$	125.726	2331.5	797712	9	9	8.65E+08	2.05E-03
			125.524	1051.5	797712	7	9	1.30E+10	3.96E-02
			125.266	2331.5	800633	9	11	1.40E+10	4.03E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s$	$^3F - ^3D^o$	123.099	1349.7	813705	21	15	4.46E+09	7.23E-03
			123.494	2331.5	812086	9	7	4.05E+09	7.21E-03
			123.299	1051.5	812086	7	7	3.51E+08	8.01E-04
			123.140	0	812086	5	7	1.01E+07	3.21E-05
			123.028	1051.5	813877	7	5	3.96E+09	6.42E-03
			122.869	0	813877	5	5	4.99E+08	1.13E-03
			122.370	0	817195	5	3	4.54E+09	6.11E-03
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s$	$^3F - ^3D^o$	121.345	1349.7	825448	21	15	4.66E+09	7.35E-03
			121.553	0	822689	5	3	4.64E+09	6.17E-03
			121.487	1051.5	824184	7	5	4.13E+09	6.53E-03
			121.332	0	824184	5	5	5.21E+08	1.15E-03
			121.183	2331.5	827533	9	7	4.30E+09	7.36E-03
			120.995	1051.5	827533	7	7	3.74E+08	8.20E-04
			120.841	0	827533	5	7	1.07E+07	3.29E-05
Fe VII	$3p^6 3d^2 - 3p^6 3d6f^*$	$^3F - ^3G^o$	120.250	1349.7	832952	21	27	4.81E+10	1.34E-01
			120.401	2331.5	832889	9	11	4.86E+10	1.29E-01
			120.400	2331.5	832893	9	9	3.01E+09	6.55E-03
			120.366	2331.5	833128	9	7	6.16E+07	1.04E-04
			120.215	1051.5	832893	7	9	4.56E+10	1.27E-01
			120.181	1051.5	833128	7	7	3.90E+09	8.44E-03
			120.030	0	833128	5	7	4.46E+10	1.35E-01
Fe VII	$3p^6 3d^2 - 3p^6 3d6f$	$^3F - ^3F^o$	117.269	1349.7	854093	21	21	2.58E+10	5.31E-02
			117.458	2331.5	853697	9	7	2.06E+09	3.31E-03
			117.318	1051.5	853433	7	5	2.86E+09	4.21E-03
			117.311	2331.5	854767	9	9	2.41E+10	4.97E-02
			117.282	1051.5	853697	7	7	2.16E+10	4.46E-02
			117.174	0	853433	5	5	2.29E+10	4.72E-02
			117.138	0	853697	5	7	2.05E+09	5.91E-03
Fe VII	$3p^6 3d^2 - 3p^5 3d^2 4s^*$	$^3F - ^3G^o$	117.135	1051.5	854767	7	9	1.61E+09	4.27E-03
			117.038	1349.7	855774	21	27	1.70E+08	4.50E-04
			117.312	2331.5	854760	9	7	2.16E+05	3.46E-07
			117.146	2331.5	855969	9	9	1.06E+07	2.19E-05
			117.136	1051.5	854760	7	7	1.37E+07	2.81E-05
			117.106	2331.5	856260	9	11	1.70E+08	4.27E-04
			116.992	0	854760	5	7	1.57E+08	4.50E-04
Fe VII	$3p^6 3d^2 - 3p^6 3d6f$	$^3F - ^3D^o$	116.970	1051.5	855969	7	9	1.60E+08	4.22E-04
			117.023	1349.7	855880	21	15	2.49E+08	3.65E-04
			117.127	2331.5	856109	9	7	2.28E+08	3.65E-04
			116.951	1051.5	856109	7	7	1.98E+07	4.06E-05
			116.912	0	855346	5	3	2.51E+08	3.08E-04
			116.808	0	856109	5	7	5.66E+05	1.62E-06
				1051.5		7	5	2.24E+08	3.29E-04
Fe VII	$3p^6 3d^2 - 3p^6 3d7f$	$^3F - ^3F^o$		0		5	5	2.81E+07	5.76E-05
			111.8372	1349.7	895506	21	21	1.63E+10	3.06E-02
			112.0307	2331.5	894944	9	7	1.31E+09	1.91E-03
			111.8986	1051.5	894718	7	5	1.81E+09	2.43E-03
			111.8703	1051.5	894944	7	7	1.37E+10	2.57E-02
			111.8505	2331.5	896382	9	9	1.53E+10	2.87E-02
			111.7671	0	894718	5	5	1.46E+10	2.73E-02
Fe VII	$3p^6 3d^2 - 3p^6 3d7f$	$^3F - ^3G^o$	111.7388	0	894944	5	7	1.30E+09	3.41E-03
			111.6906	1051.5	896382	7	9	1.02E+09	2.46E-03
			111.6752	1349.7	896804	21	27	3.37E+10	8.09E-02
			111.9304	2331.5	895744	9	7	4.26E+07	6.23E-05
			111.7702	1051.5	895744	7	7	2.70E+09	5.05E-03
			111.7636	2331.5	897077	9	9	2.10E+09	3.93E-03
			111.7415	2331.5	897254	9	11	3.36E+10	7.69E-02
Fe VII	$3p^6 3d^2 - 3p^6 3d7f$	$^3F - ^3G^o$	111.6390	0	895744	5	7	3.09E+10	8.09E-02
			111.6040	1051.5	897077	7	9	3.16E+10	7.59E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe VII	$3p^6 3d^2 - 3p^6 3d8f$	$^3F - ^3F^\circ$	108.5496	1349.7	922587	21	21	1.56E+10	2.76E-02
			108.7710	2331.5	921694	9	7	1.25E+09	1.72E-03
			108.6198	1051.5	921694	7	7	1.31E+10	2.31E-02
			108.5835	2331.5	923282	9	9	1.46E+10	2.58E-02
			108.4959	0	921694	5	7	1.24E+09	3.07E-03
			108.4328	1051.5	923282	7	9	9.80E+08	2.22E-03
				0		5	5	1.40E+10	2.48E-02
Fe VII	$3p^6 3d^2 - 3p^6 3d8f$	$^3F - ^3G^\circ$		1051.5		7	5	1.75E+09	2.21E-03
			108.4089	1349.7	923783	21	27	2.33E+10	5.27E-02
			108.5323	2331.5	923716	9	9	1.45E+09	2.56E-03
			108.5180	2331.5	923838	9	11	2.32E+10	5.01E-02
			108.3818	1051.5	923716	7	9	2.19E+10	4.95E-02
				0		5	7	2.16E+10	5.33E-02
				1051.5		7	7	1.89E+09	3.33E-03
Fe VII	$3p^6 3d^2 - 3p^6 3d9f$	$^3F - ^3G^\circ$		2331.5		9	7	3.01E+07	4.12E-05
			106.3122	1349.7	941975	21	27	1.68E+10	3.65E-02
			106.4298	2331.5	941918	9	9	1.04E+09	1.77E-03
			106.4180	2331.5	942022	9	11	1.67E+10	3.46E-02
			106.2850	1051.5	941918	7	9	1.57E+10	3.42E-02
				0		5	7	1.56E+10	3.69E-02
				1051.5		7	7	1.36E+09	2.30E-03
Fe VII	$3p^6 3d^2 - 3p^6 3d10f$	$^3F - ^3G^\circ$		2331.5		9	7	2.15E+07	2.84E-05
			104.8670	1349.7	954938	21	27	1.25E+10	2.66E-02
			104.9789	2331.5	954904	9	9	7.81E+08	1.29E-03
			104.9721	2331.5	954966	9	11	1.25E+10	2.53E-02
			104.8380	1051.5	954904	7	9	1.18E+10	2.49E-02
				0		5	7	1.17E+10	2.69E-02
				1051.5		7	7	1.02E+09	1.68E-03
Fe VIII	$3p^6 3d - 3p^5 3d^2$	$^2D - ^2F^\circ$		2331.5		9	7	1.62E+07	2.08E-05
			231.462	1102	433139	10	14	1.22E+09	1.37E-02
			232.876	1836	431250	6	6	7.97E+07	6.48E-04
			231.884	0	431250	4	6	1.13E+09	1.37E-02
			231.097	1836	434555	6	8	1.23E+09	1.31E-02
Fe VIII	$3p^6 3d - 3p^5 3d^2$	$^2D - ^2F^\circ$	221.447	1102	452676	10	14	3.12E+09	3.21E-02
			224.305	1836	447658	6	8	2.99E+09	3.01E-02
			218.564	1836	459367	6	6	2.16E+08	1.55E-03
			217.691	0	459367	4	6	3.06E+09	3.26E-02
Fe VIII	$3p^6 3d - 3p^5 3d^2$	$^2D - ^2P^\circ$	195.497	1102	512619	10	6	1.32E+09	4.55E-03
			197.362	1836	508518	6	4	1.16E+09	4.51E-03
			196.650	0	508518	4	4	1.30E+08	7.54E-04
			192.004	0	520822	4	2	1.40E+09	3.86E-03
Fe VIII	$3p^6 3d - 3p^6 4p$	$^2D - ^2P^\circ$	195.049	1102	513792	10	6	4.24E+10	1.45E-01
			195.972	0	510277	4	2	4.17E+10	1.20E-01
			194.661	1836	515550	6	4	3.83E+10	1.45E-01
			193.968	0	515550	4	4	4.29E+09	2.42E-02
Fe VIII	$3p^6 3d - 3p^5 3d^2$	$^2D - ^2F^\circ$	185.822	1102	539250	10	14	9.77E+10	7.08E-01
			187.240	1836	535909	6	6	6.35E+09	3.34E-02
			186.599	0	535909	4	6	9.00E+10	7.05E-01
			185.213	1836	541755	6	8	9.87E+10	6.77E-01
Fe VIII	$3p^6 3d - 3p^5 3d^2$	$^2D - ^2P^\circ$	168.638	1102	594089	10	6	2.23E+11	5.70E-01
			168.929	0	591964	4	2	2.22E+11	4.74E-01
			168.544	1836	595152	6	4	2.01E+11	5.71E-01
			168.024	0	595152	4	4	2.25E+10	9.54E-02
Fe VIII	$3p^6 3d - 3p^5 3d^2$	$^2D - ^2D^\circ$	167.897	1102	596704	10	10	1.26E+08	5.33E-04
			168.173	1836	596463	6	6	1.17E+08	4.96E-04
			168.003	1836	597065	6	4	1.25E+07	3.54E-05
			167.655	0	596463	4	6	8.45E+06	5.34E-05
			167.486	0	597065	4	4	1.14E+08	4.81E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe VIII	$3p^6 3d-3p^6 4f$	$^2D-^2F^o$	131.121	1102	763758	10	14	1.57E+11	5.68E-01
			131.257	1836	763703	6	6	1.05E+10	2.70E-02
			131.240	1836	763799	6	8	1.57E+11	5.40E-01
			130.941	0	763703	4	6	1.48E+11	5.69E-01
Fe VIII	$3p^6 3d-3p^5 3d(^3P^o)4s$	$^2D-^2P^o$	119.047	1102	841106	10	6	3.33E+10	4.25E-02
			119.380	0	837661	4	2	3.30E+10	3.53E-02
			118.907	1836	842829	6	4	3.01E+10	4.25E-02
			118.648	0	842829	4	4	3.37E+09	7.11E-03
Fe VIII	$3p^6 3d-3p^5 3d(^3F^o)4s$	$^2D-^2F^o$	116.773	1102	857464	10	14	3.88E+10	1.11E-01
			117.197	1836	855100	6	8	3.82E+10	1.05E-01
			116.444	1836	860615	6	6	2.62E+09	5.33E-03
			116.196	0	860615	4	6	3.69E+10	1.12E-01
Fe VIII	$3p^6 3d-3p^5 3d(^1D^o)4s$	$^2D-^2D^o$	113.374	1102	883137	10	10	6.59E+08	1.27E-03
			113.700	1836	881345	6	4	6.56E+07	8.47E-05
			113.463	0	881345	4	4	5.96E+08	1.15E-03
			113.315	1836	884331	6	6	6.18E+08	1.19E-03
Fe VIII	$3p^6 3d-3p^5 3d(^1F^o)4s$	$^2D-^2F^o$	113.293	1102	883766	10	14	2.02E+10	5.45E-02
			114.001	1836	879021	6	6	1.32E+09	2.58E-03
			113.763	0	879021	4	6	1.87E+10	5.43E-02
			112.932	1836	887325	6	8	2.04E+10	5.21E-02
Fe VIII	$3p^6 3d-3p^5 3d(^3D^o)4s$	$^2D-^2D^o$	112.4795	1102	890152	10	10	4.90E+10	9.30E-02
			112.7044	1836	889113	6	4	4.88E+09	6.19E-03
			112.4848	1836	890845	6	6	4.58E+10	8.68E-02
			112.4716	0	889113	4	4	4.41E+10	8.37E-02
Fe VIII	$3p^6 3d-3p^5 5f$	$^2D-^2F^o$	112.2530	0	890845	4	6	3.29E+09	9.32E-03
			107.9935	1102	927084	10	14	8.05E+10	1.97E-01
			108.0821	1836	927059	6	6	5.37E+09	9.40E-03
			108.0770	1836	927102	6	8	8.05E+10	1.88E-01
Fe VIII	$3p^6 3d-3p^6 6f$	$^2D-^2F^o$	107.8680	0	927059	4	6	7.57E+10	1.98E-01
			98.4771	1102	1016566	10	14	5.16E+10	1.05E-01
			98.5490	1836	1016560	6	6	3.45E+09	5.02E-03
			98.5480	1836	1016570	6	8	5.20E+10	1.01E-01
Fe VIII	$3p^6 3d-3p^6 7f$	$^2D-^2F^o$	98.3710	0	1016560	4	6	4.87E+10	1.06E-01
			93.5576	1102	1069962	10	14	3.97E+10	7.30E-02
			93.6297	1836	1069873	6	6	2.64E+09	3.47E-03
			93.6160	1836	1070029	6	8	3.97E+10	6.95E-02
Fe IX	$3s^2 3p^6-3s^2 3p^5 3d$	$^1S-^1P^o$	93.4690	0	1069873	4	6	3.72E+10	7.30E-02
			82.4300	0	1213150	1	3	1.79E+11	5.48E-01
			72.8911	0	1371910	1	3	2.66E+10	6.35E-02
			352.086	5227.7	289249	6	2	4.54E+09	2.81E-02
Fe X	$3s^2 3p^5-3s 3p^6$	$^2P^o-^2S$	365.543	15683.1	289249	2	2	1.35E+09	2.71E-02
			345.723	0	289249	4	2	3.19E+09	2.86E-02
			234.357	5227.7	431928	6	6	3.92E+08	3.23E-03
			240.243	15683.1	431928	2	4	6.07E+07	1.05E-03
Fe X	$3s^2 3p^5-3p^4(^1D)3d$	$^2P^o-^2P$	231.520	0	431928	4	4	3.40E+08	2.73E-03
				15683.1		2	2	2.59E+08	2.13E-03
				0		4	2	1.29E+08	5.33E-04
Fe X	$3s^2 3p^5-3p^4(^1D)3d$	$^2P^o-^2D$	232.891	5227.7	434614	6	10	1.48E+08	2.00E-03
			238.703	15683.1	434614	2	4	1.14E+08	1.95E-03
			230.089	0	434614	4	4	2.54E+07	2.02E-04
				0		4	6	1.50E+08	1.83E-03
Fe X	$3s^2 3p^5-3p^4(^1S)3d$	$^2P^o-^2D$	197.405	5227.7	511800	6	10	5.25E+07	5.11E-04
			201.565	15683.1	511800	2	4	4.11E+07	5.01E-04
			195.389	0	511800	4	4	9.03E+06	5.17E-05
				0		4	6	5.31E+07	4.65E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe X	$3s^2 3p^5 - 3p^4(^1D)3d$	$^2P^\circ - ^2S$	186.341	5227.7	541879	6	2	1.65E+11	2.87E-01
			190.043	15683.1	541879	2	2	5.21E+10	2.82E-01
			184.543	0	541879	4	2	1.14E+11	2.90E-01
Fe X	$3s^2 3p^5 - 3p^4(^3P)3d$	$^2P^\circ - ^2P$	178.285	5227.7	566127	6	6	1.56E+11	7.43E-01
			182.310	15683.1	564198	2	4	2.43E+10	2.42E-01
			180.407	15683.1	569985	2	2	1.00E+11	4.90E-01
			177.243	0	564198	4	4	1.32E+11	6.22E-01
			175.443	0	569985	4	2	5.46E+10	1.26E-01
Fe X	$3s^2 3p^5 - 3p^4(^3P)3d$	$^2P^\circ - ^2D$	174.507	5227.7	578270	6	10	1.88E+11	1.43E+00
			175.266	15683.1	586244	2	4	1.53E+11	1.41E+00
			174.534	0	572954	4	6	1.87E+11	1.28E+00
			170.577	0	586244	4	4	3.35E+10	1.46E-01
Fe X	$3s^2 3p^5 - 3p^4(^3P)4s$	$^2P^\circ - ^2P$	96.342	5227.7	1043200	6	6	1.08E+11	1.50E-01
			97.593	15683.1	1040350	2	4	1.73E+10	4.94E-02
			96.786	15683.1	1048890	2	2	7.07E+10	9.93E-02
			96.121	0	1040350	4	4	9.10E+10	1.26E-01
			95.339	0	1048890	4	2	3.71E+10	2.53E-02
Fe X	$3s^2 3p^5 - 3p^4(^1D)4s$	$^2P^\circ - ^2D$	94.459	5227.7	1063890	6	10	3.92E+10	8.73E-02
			95.374	15683.1	1064190	2	4	3.17E+10	8.65E-02
			94.012	0	1063690	4	6	3.97E+10	7.90E-02
			93.968	0	1064190	4	4	6.62E+09	8.77E-03
Fe X	$3s^2 3p^5 - 3p^4(^3P)4d$	$^2P^\circ - ^2D$	78.1613	5227.7	1284630	6	10	1.21E+11	1.85E-01
			78.7714	15683.1	1285180	2	4	9.89E+10	1.84E-01
			77.8652	0	1284270	4	6	1.22E+11	1.67E-01
			77.8101	0	1285180	4	4	2.05E+10	1.86E-02
Fe X	$3s^2 3p^5 - 3p^4(^3P)4d$	$^2P^\circ - ^2P$	77.5174	5227.7	1295260	6	6	2.59E+10	2.33E-02
			78.1508	15683.1	1295260	2	4	4.22E+09	7.72E-03
			77.2046	0	1295260	4	4	2.19E+10	1.96E-02
				15683.1		2	2	1.74E+10	1.57E-02
				0		4	2	8.70E+09	3.92E-03
Fe X	$3s^2 3p^5 - 3p^4(^1D)4d$	$^2P^\circ - ^2P$	76.2760	5227.7	1316260	6	6	1.50E+11	1.31E-01
			76.9227	15683.1	1315690	2	4	2.45E+10	4.35E-02
			76.8222	15683.1	1317390	2	2	9.84E+10	8.71E-02
			76.0057	0	1315690	4	4	1.27E+11	1.10E-01
			75.9077	0	1317390	4	2	5.12E+10	2.21E-02
Fe X	$3s^2 3p^5 - 3p^4(^1D)4d$	$^2P^\circ - ^2D$	75.9464	5227.7	1321950	6	10	9.09E+10	1.31E-01
			76.4949	15683.1	1322960	2	4	7.41E+10	1.30E-01
			75.6848	0	1321270	4	6	9.24E+10	1.19E-01
			75.5881	0	1322960	4	4	1.54E+10	1.32E-02
Fe XI	$3s^2 3p^4 - 3s3p^5$	$^3P - ^3P^\circ$	353.758	5812.9	288492	9	9	3.29E+09	6.17E-02
			369.153	12667.9	283558	3	5	7.25E+08	2.47E-02
			358.621	14312	293158	1	3	1.05E+09	6.09E-02
			356.519	12667.9	293158	3	3	8.03E+08	1.53E-02
			352.662	0	283558	5	5	2.49E+09	4.65E-02
			349.046	12667.9	299163	3	1	3.42E+09	2.08E-02
			341.113	0	293158	5	3	1.53E+09	1.60E-02
Fe XI	$3s^2 3p^4 - 3p^3(^2P^\circ)3d$	$^3P - ^3P^\circ$	203.97	5812.9	496090	9	9	4.15E+09	2.59E-02
			206.86	12667.9	496090	3	5	9.91E+08	1.06E-02
			201.58	0	496090	5	5	3.23E+09	1.97E-02
				12667.9		3	3	1.02E+09	6.39E-03
				0		5	3	1.71E+09	6.39E-03
				12667.9		3	1	4.10E+09	8.52E-03
Fe XI	$3s^2 3p^4 - 3p^3(^2D^\circ)3d$	$^3P - ^3S^\circ$	14312			1	3	1.37E+09	2.56E-02
			189.52	5812.9	533450	9	3	9.41E+10	1.69E-01
			192.63	14312	533450	1	3	9.95E+09	1.66E-01
			192.02	12667.9	533450	3	3	3.02E+10	1.67E-01
			187.46	0	533450	5	3	5.41E+10	1.71E-01

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XI	$3s^2 3p^4 - 3p^3(^2D^\circ)3d$ :	$^3P - ^3P^\circ$	188.68	5812.9	535820	9	9	1.22E+11	6.51E-01
			192.82	12667.9	531290	3	5	2.85E+10	2.65E-01
			189.73	14312	541390	1	3	4.00E+10	6.47E-01
			189.14	12667.9	541390	3	3	3.02E+10	1.62E-01
			189.02	12667.9	541720	3	1	1.22E+11	2.17E-01
			188.22	0	531290	5	5	9.23E+10	4.90E-01
			184.71	0	541390	5	3	5.41E+10	1.66E-01
Fe XI	$3s^2 3p^4 - 3p^3(^4S^\circ)3d$ :	$^3P - ^3D^\circ$	180.72	5812.9	559150	9	15	1.36E+11	1.11E+00
			182.17	12667.9	561610	3	5	9.95E+10	8.25E-01
			181.14	14312	566380	1	3	7.45E+10	1.10E+00
			180.60	12667.9	566380	3	3	5.69E+10	2.78E-01
			180.41	0	554300	5	7	1.37E+11	9.33E-01
			178.06	0	561610	5	5	3.53E+10	1.68E-01
			176.56	0	566380	5	3	4.03E+09	1.13E-02
Fe XI	$3s^2 3p^4 - 3p^3(^4S^\circ)4s$	$^3P - ^3S^\circ$	89.653	5812.9	1121230	9	3	1.68E+11	6.75E-02
			90.341	14312	1121230	1	3	1.83E+10	6.70E-02
			90.207	12667.9	1121230	3	3	5.50E+10	6.71E-02
			89.188	0	1121230	5	3	9.48E+10	6.78E-02
Fe XI	$3s^2 3p^4 - 3p^3(^2D^\circ)4s$	$^3P - ^3D^\circ$	87.3554	5812.9	1150560	9	15	4.80E+10	9.15E-02
			88.1618	14312	1148590	1	3	2.59E+10	9.07E-02
			88.0342	12667.9	1148590	3	3	1.95E+10	2.27E-02
			87.9947	12667.9	1149100	3	5	3.52E+10	6.82E-02
			87.0633	0	1148590	5	3	1.35E+09	9.18E-04
			87.0246	0	1149100	5	5	1.21E+10	1.37E-02
			86.7717	0	1152450	5	7	4.90E+10	7.74E-02
Fe XI	$3s^2 3p^4 - 3p^3(^4S^\circ)4d$	$^3P - ^3D^\circ$	72.9428	5812.9	1376750	9	15	1.00E+11	1.33E-01
			72.6348	0	1376750	5	7	1.01E+11	1.12E-01
				12667.9		3	5	7.52E+10	1.00E-01
				14312		1	3	5.56E+10	1.33E-01
				0		5	5	2.51E+10	2.00E-02
				12667.9		3	3	4.17E+10	3.33E-02
				0		5	3	2.78E+09	1.33E-03
Fe XII	$3s^2 3p^3 - 3s3p^4$	$^4S^\circ - ^4P$	357.263	0	279906	4	12	1.81E+09	1.04E-01
			364.467	0	274373	4	6	1.70E+09	5.07E-02
			352.106	0	284005	4	4	1.88E+09	3.50E-02
			346.852	0	288307	4	2	1.97E+09	1.78E-02
Fe XII	$3s^2 3p^3 - 3p^2(^3P)3d$	$^4S^\circ - ^4P$	194.13	0	515130	4	12	8.97E+10	1.52E+00
			195.12	0	512510	4	6	8.85E+10	7.58E-01
			193.52	0	516740	4	4	9.07E+10	5.09E-01
			192.39	0	519770	4	2	9.23E+10	2.56E-01
Fe XII	$3s^2 3p^3 - 3p^2(^3P)4s$	$^4S^\circ - ^4P$	79.8353	0	1252580	4	12	6.52E+10	1.87E-01
			80.5153	0	1242000	4	2	6.38E+10	3.10E-02
			80.0218	0	1249660	4	4	6.49E+10	6.23E-02
			79.4881	0	1258050	4	6	6.62E+10	9.41E-02
Fe XII	$3s^2 3p^3 - 3p^2(^3P)4d$	$^4S^\circ - ^4P$	66.1397	0	1511950	4	12	2.66E+11	5.24E-01
			66.2972	0	1508360	4	6	2.64E+11	2.61E-01
			65.9048	0	1517340	4	4	2.69E+11	1.75E-01
				0		4	2	2.67E+11	8.75E-02
Fe XIII	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3D^\circ$	363.311	13412.5	288659	9	15	1.55E+09	5.11E-02
			372.240	18561.0	287205	5	3	4.00E+07	4.99E-04
			372.025	18561.0	287360	5	5	3.61E+08	7.49E-03
			368.122	18561.0	290210	5	7	1.49E+09	4.24E-02
			359.838	9302.5	287205	3	3	6.65E+08	1.29E-02
			359.638	9302.5	287360	3	5	1.20E+09	3.88E-02
			348.183	0	287205	1	3	9.77E+08	5.33E-02
Fe XIII	$3s^2 3p^2 - 3s3p^3$	$^3P - ^3P^\circ$	315.827	13412.5	330042	9	9	4.17E+09	6.23E-02
			321.455	18561.0	329647	5	3	1.65E+09	1.53E-02
			320.803	18561.0	330279	5	5	2.98E+09	4.60E-02
			312.164	9302.5	329647	3	3	1.08E+09	1.58E-02
			311.549	9302.5	330279	3	5	1.08E+09	2.63E-02
			303.355	0	329647	1	3	1.57E+09	6.49E-02
				9302.5		3	1	3.95E+09	1.97E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XIII	$3s^23p^2-3s3p^3$	$^3P-^3S^o$	248.726	13412.5	415462	9	3	6.37E+10	1.97E-01
			251.952	18561.0	415462	5	3	3.40E+10	1.94E-01
			246.209	9302.5	415462	3	3	2.19E+10	1.99E-01
			240.696	0	415462	1	3	7.83E+09	2.04E-01
Fe XIII	$3s^23p^2-3s^23p3d$	$^3P-^3P^o$	209.339	13412.5	491106	9	9	4.34E+10	2.85E-01
			213.768	18561.0	486358	5	5	3.05E+10	2.09E-01
			209.916	18561.0	494942	5	3	1.79E+10	7.10E-02
			209.619	9302.5	486358	3	5	1.07E+10	1.18E-01
			205.914	9302.5	494942	3	3	1.14E+10	7.23E-02
			202.414	9302.5	503340	3	1	4.79E+10	9.81E-02
			202.044	0	494942	1	3	1.61E+10	2.95E-01
Fe XIII	$3s^23p^2-3s^23p3d$	$^3P-^3D^o$	201.917	13412.5	508666	9	15	6.99E+10	7.12E-01
			204.943	18561.0	506502	5	3	1.86E+09	7.02E-03
			203.826	18561.0	509176	5	7	6.80E+10	5.93E-01
			203.795	18561.0	509250	5	5	1.70E+10	1.06E-01
			201.127	9302.5	506502	3	3	2.95E+10	1.79E-01
			200.021	9302.5	509250	3	5	5.39E+10	5.39E-01
			197.433	0	506502	1	3	4.15E+10	7.28E-01
Fe XIII	$3s^23p^2-3s^23p4s$	$^3P-^3P^o$	74.9431	13412.5	1347760	9	9	1.20E+11	1.01E-01
			75.8922	18561.0	1336220	5	3	4.81E+10	2.49E-02
			75.3626	9302.5	1336220	3	3	2.94E+10	2.50E-02
			74.8436	18561.0	1354680	5	5	9.01E+10	7.57E-02
			74.8380	0	1336220	1	3	4.01E+10	1.01E-01
			74.3286	9302.5	1354680	3	5	3.06E+10	4.23E-02
				9302.5		3	1	1.20E+11	3.36E-02
Fe XIII	$3s^23p^2-3s^23p4d$	$^3P-^3D^o$	62.8172	13412.5	1605330	9	15	3.51E+11	3.46E-01
			63.0832	18561.0	1603770	5	3	9.64E+09	3.45E-03
			63.0653	18561.0	1604220	5	5	8.65E+10	5.16E-02
			62.9628	18561.0	1606800	5	7	3.49E+11	2.90E-01
			62.7169	9302.5	1603770	3	3	1.47E+11	8.66E-02
			62.6992	9302.5	1604220	3	5	2.65E+11	2.60E-01
			62.3531	0	1603770	1	3	2.00E+11	3.49E-01
Fe XIII	$3s^23p^2-3s^23p4d$	$^3P-^3P^o$	62.24	13412.5	1620000	9	9	1.82E+11	1.06E-01
			62.08	9302.5	1620000	3	1	1.83E+11	3.53E-02
				18561.0		5	5	1.36E+11	7.92E-02
				9302.5		3	3	4.55E+10	2.64E-02
				18561.0		5	3	7.58E+10	2.64E-02
				9302.5		3	5	4.55E+10	4.40E-02
				0		1	3	6.08E+10	1.06E-01
Fe XIV	$3s^23p-3s3p^2$	$^2P^o-^2D$	347.205	12568.3	300582	6	10	2.26E+09	6.82E-02
			356.639	18852.5	299248	4	4	3.48E+08	6.64E-03
			353.833	18852.5	301472	4	6	2.14E+09	6.03E-02
			334.171	0	299248	2	4	2.12E+09	7.09E-02
Fe XIV	$3s^23p-3s3p^2$	$^2P^o-^2S$	283.990	12568.3	364693	6	2	1.38E+10	5.58E-02
			289.151	18852.5	364693	4	2	8.74E+09	5.48E-02
			274.203	0	364693	2	2	5.13E+09	5.78E-02
Fe XIV	$3s^23p-3s3p^2$	$^2P^o-^2P$	262.276	12568.3	393847	6	6	4.17E+10	4.30E-01
			270.521	18852.5	388510	4	2	1.27E+10	6.96E-02
			264.787	18852.5	396515	4	4	3.38E+10	3.55E-01
			257.394	0	388510	2	2	2.95E+10	2.93E-01
			252.197	0	396515	2	4	7.81E+09	1.49E-01
Fe XIV	$3s^23p-3s^23d$	$^2P^o-^2D$	216.519	12568.3	474421	6	10	4.13E+10	4.84E-01
			220.083	18852.5	473227	4	4	6.55E+09	4.76E-02
			219.123	18852.5	475217	4	6	3.98E+10	4.30E-01
			211.315	0	473227	2	4	3.70E+10	4.96E-01
Fe XIV	$3s^23p-3s^24s$	$^2P^o-^2S$	70.3012	12568.3	1435020	6	2	2.63E+11	6.49E-02
			70.6131	18852.5	1435020	4	2	1.73E+11	6.46E-02
			69.6854	0	1435020	2	2	9.00E+10	6.55E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XIV	$3s^2 3p-3s^2 4d$	$^2P^\circ-^2D$	59.3755	12568.3	1696770	6	10	3.21E+11	2.83E-01
			59.6258	18852.5	1695980	4	4	5.29E+10	2.82E-02
			59.5792	18852.5	1697290	4	6	3.18E+11	2.54E-01
			58.9630	0	1695980	2	4	2.73E+11	2.85E-01
Fe XV	$3s^2-3s3p$	$^1S-^1P^\circ$	284.163	0	351911	1	3	2.27E+10	8.24E-01
Fe XV	$3s^2-3p3d$	$^1S-^1P^\circ$	93.0330	0	1074887	1	3	3.29E+08	1.28E-03
Fe XV	$3s^2-3s4p$	$^1S-^1P^\circ$	52.9109	0	1889970	1	3	3.24E+11	4.08E-01
Fe XV	$3s^2-3s5p$	$^1S-^1P^\circ$	38.956	0	2567000	1	3	1.60E+11	1.09E-01
Fe XVI	$2p^6 3s-2p^6 3p$	$^2S-^2P^\circ$	343.455	0	291159	2	6	7.29E+09	3.87E-01
			360.761	0	277192	2	2	6.25E+09	1.22E-01
			335.410	0	298143	2	4	7.86E+09	2.65E-01
Fe XVI	$2p^6 3s-2p^6 4p$	$^2S-^2P^\circ$	50.4181	0	1983410	2	6	2.08E+11	2.38E-01
			50.5551	0	1978040	2	2	2.07E+11	7.93E-02
			50.3499	0	1986100	2	4	2.09E+11	1.59E-01
Fe XVI	$2p^6 3s-2p^6 5p$	$^2S-^2P^\circ$	36.7670	0	2719830	2	6	1.20E+11	7.28E-02
			36.8030	0	2717170	2	2	1.19E+11	2.42E-02
			36.7490	0	2721160	2	4	1.20E+11	4.85E-02
Fe XVI	$2p^6 3s-2p^6 6p$	$^2S-^2P^\circ$	32.174	0	3108100	2	6	7.13E+10	3.32E-02
			32.192	0	3106400	2	2	7.14E+10	1.11E-02
			32.166	0	3108900	2	4	7.12E+10	2.21E-02
Fe XVI	$2p^6 3s-2p^6 7p$	$^2S-^2P^\circ$	29.93	0	3341000	2	6	4.54E+10	1.83E-02
			29.93	0	3341000	2	4	4.54E+10	1.22E-02
				0		2	2	4.50E+10	6.05E-03
Fe XVI	$2p^6 3s-2p^6 8p$	$^2S-^2P^\circ$	28.67	0	3488000	2	6	3.06E+10	1.13E-02
			28.67	0	3488000	2	4	3.06E+10	7.55E-03
				0		2	2	3.03E+10	3.73E-03
Fe XVI	$2p^6 3s-2p^6 9p$	$^2S-^2P^\circ$	27.88	0	3587000	2	6	2.15E+10	7.52E-03
			27.88	0	3587000	2	4	2.15E+10	5.02E-03
				0		2	2	2.13E+10	2.48E-03
Fe XVII	$2s^2 2p^6-2p^5 3d$	$^1S-^1P^\circ$	15.015	0	6660000	1	3	2.91E+13	2.95E+00
Fe XVII	$2s^2 2p^6-2p^5 3p$	$^1S-^1P^\circ$	13.823	0	7234300	1	3	3.85E+12	3.31E-01
Fe XVII	$2s^2 2p^6-2p^5 4d$	$^1S-^1P^\circ$	12.12	0	8249000	1	3	1.12E+13	7.42E-01
Fe XVII	$2s^2 2p^6-2p^5 5d$	$^1S-^1P^\circ$	11.13	0	8982000	1	3	6.21E+12	3.46E-01
Fe XVII	$2s^2 2p^6-2p^5 4p$	$^1S-^1P^\circ$	11.02	0	9072000	1	3	1.71E+12	9.35E-02
Fe XVII	$2s^2 2p^6-2p^5 5p$	$^1S-^1P^\circ$	10.12	0	9878000	1	3	1.10E+12	5.05E-02
Fe XVIII	$2s^2 2p^5-2s2p^6$	$^2P^\circ-^2S$	97.0394	34193	1064702	6	2	1.07E+11	5.04E-02
			103.9368	102579	1064702	2	2	2.91E+10	4.71E-02
			93.9230	0	1064702	4	2	7.88E+10	5.21E-02
Fe XVIII	$2s^2 2p^5-2p^4(^3P)3s$	$^2P^\circ-^2P$	16.012	34193	6279600	6	6	2.56E+12	9.84E-02
			16.272	102579	6248100	2	4	4.07E+11	3.23E-02
			16.026	102579	6342600	2	2	1.70E+12	6.55E-02
			16.005	0	6248100	4	4	2.14E+12	8.20E-02
			15.766	0	6342600	4	2	8.96E+11	1.67E-02
Fe XVIII	$2s^2 2p^5-2p^4(^1D)3s$	$^2P^\circ-^2D$	15.705	34193	6401500	6	10	1.03E+12	6.36E-02
			15.870	102579	6403800	2	4	8.33E+11	6.29E-02
			15.625	0	6400000	4	6	1.05E+12	5.76E-02
			15.616	0	6403800	4	4	1.75E+11	6.39E-03
Fe XVIII	$2s^2 2p^5-2p^4(^1S)3s$	$^2P^\circ-^2S$	15.288	34193	6575100	6	2	1.06E+12	1.24E-02
			15.450	102579	6575100	2	2	3.44E+11	1.23E-02
			15.209	0	6575100	4	2	7.27E+11	1.26E-02



**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XVIII	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^\circ - ^2P$	14.465	34193	6947300	6	6	1.45E+12	4.56E-02
			14.610	102579	6947300	2	4	2.36E+11	1.51E-02
			14.394	0	6947300	4	4	1.23E+12	3.81E-02
				102579		2	2	9.59E+11	3.01E-02
				0		4	2	4.80E+11	7.53E-03
Fe XVIII	$2s^2 2p^5 - 2p^4(^3P)3d$	$^2P^\circ - ^2D$	14.444	34193	6957500	6	10	7.44E+12	3.88E-01
			14.373	0	6957500	4	6	7.58E+12	3.52E-01
				102579		2	4	6.15E+12	3.85E-01
				0		4	4	1.23E+12	3.85E-02
Fe XVIII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2S$	14.326	34193	7014300	6	2	1.93E+13	1.98E-01
			14.468	102579	7014300	2	2	6.25E+12	1.96E-01
			14.257	0	7014300	4	2	1.31E+13	1.99E-01
Fe XVIII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2P$	14.253	34193	7050300	6	6	2.49E+13	7.57E-01
			14.418	102579	7038400	2	4	4.01E+12	2.50E-01
			14.344	102579	7074200	2	2	1.62E+13	5.01E-01
			14.208	0	7038400	4	4	2.09E+13	6.33E-01
			14.136	0	7074200	4	2	8.48E+12	1.27E-01
Fe XVIII	$2s^2 2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2D$	14.252	34193	7050900	6	10	2.05E+13	1.04E+00
			14.361	102579	7066100	2	4	1.68E+13	1.04E+00
			14.203	0	7040800	4	6	2.07E+13	9.39E-01
			14.152	0	7066100	4	4	3.50E+12	1.05E-01
Fe XVIII	$2s^2 2p^5 - 2p^4(^1S)3d$	$^2P^\circ - ^2D$	14.007	34193	7173600	6	10	5.20E+12	2.55E-01
			14.121	102579	7184300	2	4	4.21E+12	2.52E-01
			13.954	0	7166400	4	6	5.25E+12	2.30E-01
			13.919	0	7184300	4	4	8.81E+11	2.56E-02
Fe XVIII	$2s^2 2p^5 - 2p^5(^3P^\circ)3p$	$^2P^\circ - ^2P$	13.404	34193	7494600	6	6	4.08E+12	1.10E-01
			13.541	102579	7487800	2	4	6.58E+11	3.62E-02
			13.503	102579	7508100	2	2	2.66E+12	7.26E-02
			13.355	0	7487800	4	4	3.43E+12	9.18E-02
			13.319	0	7508100	4	2	1.38E+12	1.84E-02
Fe XVIII	$2s^2 2p^5 - 2p^5(^3P^\circ)3p$	$^2P^\circ - ^2D$	13.371	34193	7513100	6	10	3.51E+12	1.57E-01
			13.397	102579	7567000	2	4	2.92E+12	1.57E-01
			13.374	0	7477200	4	6	3.51E+12	1.41E-01
			13.215	0	7567000	4	4	6.07E+11	1.59E-02
Fe XVIII	$2s^2 2p^5 - 2p^5(^3P^\circ)3p$	$^2P^\circ - ^2S$	13.218	34193	7599400	6	2	5.55E+12	4.85E-02
			13.339	102579	7599400	2	2	1.80E+12	4.80E-02
			13.159	0	7599400	4	2	3.75E+12	4.87E-02
Fe XVIII	$2s^2 2p^5 - 2p^5(^1P^\circ)3p$	$^2P^\circ - ^2D$	12.917	34193	7775700	6	10	1.30E+12	5.42E-02
			13.053	102579	7763400	2	4	1.05E+12	5.36E-02
			12.881	0	7763400	4	4	2.18E+11	5.43E-03
			12.847	0	7783900	4	6	1.32E+12	4.90E-02
Fe XVIII	$2s^2 2p^5 - 2p^5(^1P^\circ)3p$	$^2P^\circ - ^2P$	12.891	34193	7791600	6	6	1.07E+12	2.67E-02
			13.015	102579	7786000	2	2	6.93E+11	1.76E-02
			13.001	102579	7794400	2	4	1.74E+11	8.80E-03
			12.844	0	7786000	4	2	3.60E+11	4.45E-03
			12.830	0	7794400	4	4	9.04E+11	2.23E-02
Fe XVIII	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^\circ - ^2D$	10.55	34193	9510000	6	10	3.12E+12	8.69E-02
			10.52	0	9510000	4	6	3.16E+12	7.85E-02
				102579		2	4	2.61E+12	8.70E-02
				0		4	4	5.21E+11	8.70E-03
Fe XVIII	$2s^2 2p^5 - 2p^4(^3P)5d$	$^2P^\circ - ^2P$	10.41	34193	9640000	6	6	1.45E+12	2.36E-02
			10.49	102579	9640000	2	4	2.37E+11	7.82E-03
			10.37	0	9640000	4	4	1.22E+12	1.97E-02
				102579		2	2	9.60E+11	1.56E-02
				0		4	2	4.79E+11	3.89E-03

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XVIII	$2s^2 2p^5 - 2p^4(^1D)5d$	$^2P^\circ - ^2P$	10.37	34193	9680000	6	6	2.90E+12	4.67E-02
			10.44	102579	9680000	2	2	1.89E+12	3.09E-02
			10.44	102579	9680000	2	4	4.74E+11	1.55E-02
			10.33	0	9680000	4	4	2.44E+12	3.91E-02
			10.33	0	9680000	4	2	9.76E+11	7.81E-03
Fe XVIII	$2s^2 2p^5 - 2p^4(^1D)5d$	$^2P^\circ - ^2D$	10.37	34193	9680000	6	10	1.47E+12	3.95E-02
			10.44	102579	9680000	2	4	1.20E+12	3.92E-02
			10.33	0	9680000	4	4	2.47E+11	3.96E-03
				0		4	6	1.46E+12	3.54E-02
Fe XVIII	$2s^2 2p^5 - 2p^4(^3P)6d$	$^2P^\circ - ^2D$	10.06	34193	9970000	6	10	2.15E+12	5.45E-02
			10.03	0	9970000	4	6	2.17E+12	4.92E-02
				102579		2	4	1.79E+12	5.45E-02
				0		4	4	3.59E+11	5.45E-03
Fe XVIII	$2s^2 2p^5 - 2p^4(^1D)6d$	$^2P^\circ - ^2P$	9.91	34193	10120000	6	6	1.36E+12	2.01E-02
			9.98	102579	10120000	2	2	8.84E+11	1.32E-02
			9.88	0	10120000	4	2	4.58E+11	3.35E-03
				0		4	4	1.13E+12	1.67E-02
				102579		2	4	2.26E+11	6.67E-03
Fe XVIII	$2s^2 2p^5 - 2p^4(^1D)6d$	$^2P^\circ - ^2D$	9.91	34193	10120000	6	10	6.43E+11	1.58E-02
			9.98	102579	10120000	2	4	5.25E+11	1.57E-02
			9.88	0	10120000	4	4	1.09E+11	1.59E-03
				0		4	6	6.42E+11	1.42E-02
Fe XIX	$2s^2 2p^4 - 2s2p^5$	$^3P - ^3P^\circ$	109.023	38175	955410	9	9	4.96E+10	8.84E-02
			119.983	89441	922890	3	5	9.31E+09	3.35E-02
			111.695	89441	984740	3	3	1.15E+10	2.15E-02
			109.952	75250	984740	1	3	1.61E+10	8.76E-02
			108.355	0	922890	5	5	3.79E+10	6.67E-02
			106.317	89441	1030020	3	1	5.35E+10	3.02E-02
			101.550	0	984740	5	3	2.55E+10	2.37E-02
Fe XIX	$2s^2 2p^4 - 2p^3(^4S^\circ)3s$	$^3P - ^3S^\circ$	15.06	38175	6680000	9	3	3.45E+12	3.91E-02
			15.17	89441	6680000	3	3	1.12E+12	3.88E-02
			15.14	75250	6680000	1	3	3.76E+11	3.88E-02
			14.97	0	6680000	5	3	1.95E+12	3.93E-02
Fe XIX	$2s^2 2p^4 - 2p^3(^2D^\circ)3s$	$^3P - ^3D^\circ$	14.79	38175	6802000	9	15	1.11E+12	6.08E-02
			14.93	89441	6787000	3	5	8.11E+11	4.52E-02
			14.93	89441	6788000	3	3	4.49E+11	1.50E-02
			14.90	75250	6788000	1	3	6.05E+11	6.04E-02
			14.73	0	6787000	5	5	2.81E+11	9.15E-03
			14.73	0	6788000	5	3	3.13E+10	6.11E-04
			14.67	0	6818000	5	7	1.14E+12	5.16E-02
Fe XIX	$2s^2 2p^4 - 2p^3(^2P^\circ)3s$	$^3P - ^3P^\circ$	14.47	38175	6947000	9	9	1.17E+12	3.67E-02
			14.67	89441	6907000	3	1	1.12E+12	1.20E-02
			14.63	89441	6923000	3	3	2.82E+11	9.06E-03
			14.60	75250	6923000	1	3	3.78E+11	3.63E-02
			14.53	89441	6970000	3	5	2.88E+11	1.52E-02
			14.44	0	6923000	5	3	4.89E+11	9.18E-03
			14.35	0	6970000	5	5	8.98E+11	2.77E-02
Fe XIX	$2s^2 2p^4 - 2p^3(^4S^\circ)5d$	$^3P - ^3D^\circ$	9.85	38175	10190000	9	15	2.64E+12	6.40E-02
			9.81	0	10190000	5	7	2.67E+12	5.39E-02
				89441		3	5	1.97E+12	4.77E-02
				75250		1	3	1.46E+12	6.35E-02
				0		5	5	6.55E+11	9.53E-03
				89441		3	3	1.09E+12	1.59E-02
				0		5	3	7.29E+10	6.36E-04
Fe XIX	$2s^2 2p^4 - 2p^3(^2D^\circ)5d$	$^3P - ^3D^\circ$	9.72	38175	10330000	9	15	1.64E+12	3.88E-02
			9.77	89441	10330000	3	5	1.21E+12	2.89E-02
			9.68	0	10330000	5	7	1.66E+12	3.27E-02
			9.68	0	10330000	5	5	4.16E+11	5.84E-03
				75250		1	3	9.09E+11	3.86E-02
				89441		3	3	6.81E+11	9.64E-03
				0		5	3	4.55E+10	3.86E-04

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XIX	$2s^2 2p^4 - 2p^3(^3P^o)5d$	$^3P - ^3D^o$	9.57	38175	10485000	9	15	1.48E+12	3.39E-02
			9.65	89441	10450000	3	3	6.02E+11	8.41E-03
			9.64	75250	10450000	1	3	8.06E+11	3.37E-02
			9.57	0	10450000	5	3	4.12E+10	3.39E-04
			9.52	0	105	5	7	1.50E+12	2.86E-02
				89441		3	5	1.11E+12	2.53E-02
				0		5	5	3.68E+11	5.05E-03
Fe XIX	$2s^2 2p^4 - 2p^3(^2P^o)5d$	$^3P - ^3P^o$	9.56	38175	10500000	9	9	8.03E+11	1.10E-02
			9.61	89441	10500000	3	3	1.98E+11	2.74E-03
			9.59	75250	10500000	1	3	2.66E+11	1.10E-02
			9.52	0	10500000	5	3	3.38E+11	2.76E-03
				0		5	5	5.97E+11	8.18E-03
				89441		3	5	1.99E+11	4.55E-03
				89441		3	1	7.97E+11	3.64E-03
Fe XIX	$2s^2 2p^4 - 2p^3(^4S^o)6d$	$^3P - ^3D^o$	9.37	38175	10710000	9	15	1.70E+12	3.74E-02
			9.34	0	10710000	5	7	1.73E+12	3.16E-02
				89441		3	5	1.27E+12	2.78E-02
				75250		1	3	9.39E+11	3.71E-02
				0		5	5	4.23E+11	5.57E-03
				89441		3	3	7.05E+11	9.28E-03
				0		5	3	4.70E+10	3.71E-04
Fe XIX	$2s^2 2p^4 - 2p^3(^2P^o)6d$	$^3P - ^3D^o$	9.33	38175	10760000	9	15	4.36E+11	9.48E-03
			9.37	89441	10760000	3	3	1.79E+11	2.36E-03
			9.36	75250	10760000	1	3	2.40E+11	9.44E-03
			9.29	0	10760000	5	3	1.22E+10	9.51E-05
				0		5	7	4.42E+11	8.07E-03
				89441		3	5	3.32E+11	7.21E-03
				0		5	5	1.10E+11	1.44E-03
Fe XX	$2s^2 2p^3 - 2s2p^4$	$^4S^o - ^4P$	126.51	0	790430	4	12	1.56E+10	1.12E-01
			132.85	0	752730	4	6	1.34E+10	5.33E-02
			121.83	0	820820	4	4	1.74E+10	3.88E-02
			118.66	0	842740	4	2	1.89E+10	2.00E-02
Fe XX	$2s^2 2p^3 - 2p^2(^3P)3d$	$^4S^o - ^4P$	12.82	0	7802000	4	12	2.54E+13	1.88E+00
			12.82	0	7802000	4	6	2.56E+13	9.44E-01
			12.82	0	7802000	4	4	2.55E+13	6.29E-01
				0		4	2	2.53E+13	3.12E-01
Fe XX	$2s^2 2p^3 - 2p^2(^3P)4d$	$^4S^o - ^4P$	10.06	0	9944500	4	12	8.40E+12	3.82E-01
			10.12	0	9880000	4	6	8.25E+12	1.90E-01
			9.991	0	10009000	4	4	8.55E+12	1.28E-01
			9.991	0	10009000	4	2	8.58E+12	6.42E-02
Fe XX	$2s^2 2p^3 - 2p^2(^3P)5d$	$^4S^o - ^4P$	9.100	0	10989000	4	12	3.79E+12	1.41E-01
			9.149	0	10930000	4	6	3.73E+12	7.03E-02
			9.051	0	11048000	4	4	3.86E+12	4.74E-02
			9.051	0	11048000	4	2	3.86E+12	2.37E-02
Fe XXI	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3D^o$	142.89	89813	789640	9	15	8.43E+09	4.30E-02
			151.65	117353	776780	5	3	1.96E+08	4.05E-04
			151.52	117353	777350	5	5	1.77E+09	6.09E-03
			145.65	117353	803930	5	7	7.97E+09	3.55E-02
			142.26	73850	776780	3	3	3.56E+09	1.08E-02
			142.15	73850	777350	3	5	6.42E+09	3.24E-02
			128.74	0	776780	1	3	6.41E+09	4.78E-02
Fe XXI	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3P^o$	118.51	89813	933620	9	9	2.30E+10	4.85E-02
			123.83	117353	924880	5	3	8.41E+09	1.16E-02
			121.22	117353	942320	5	5	1.62E+10	3.56E-02
			118.69	73850	916380	3	1	2.29E+10	1.61E-02
			117.50	73850	924880	3	3	5.89E+09	1.22E-02
			115.15	73850	942320	3	5	6.25E+09	2.07E-02
			108.122	0	924880	1	3	1.01E+10	5.31E-02
Fe XXI	$2s^2 2p^2 - 2s2p^3$	$^3P - ^3S^o$	99.425	89813	1095600	9	3	1.04E+11	5.16E-02
			102.224	117353	1095600	5	3	5.34E+10	5.02E-02
			97.871	73850	1095600	3	3	3.66E+10	5.25E-02
			91.274	0	1095600	1	3	1.50E+10	5.62E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XXI	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3D^o$	12.358	89813	8181500	9	15	2.53E+13	9.64E-01
			12.465	117353	8140000	5	3	6.84E+11	9.56E-03
			12.397	73850	8140000	3	3	1.04E+13	2.40E-01
			12.392	117353	8187400	5	5	6.26E+12	1.44E-01
			12.380	117353	8195000	5	7	2.51E+13	8.09E-01
			12.325	73850	8187400	3	5	1.91E+13	7.25E-01
			12.285	0	8140000	1	3	1.43E+13	9.70E-01
Fe XXI	$2s^2 2p^2 - 2s^2 2p3d$	$^3P - ^3P^o$	12.283	89813	8230900	9	9	1.40E+13	3.16E-01
			12.325	117353	8230900	5	5	1.04E+13	2.37E-01
			12.259	73850	8230900	3	5	3.54E+12	1.33E-01
				73850		3	3	3.46E+12	7.83E-02
				117353		5	3	5.77E+12	7.83E-02
				73850		3	1	1.38E+13	1.04E-01
				0		1	3	4.61E+12	3.13E-01
Fe XXI	$2s^2 2p^2 - 2s^2 2p4s$	$^3P - ^3P^o$	9.72	89813	10380000	9	9	6.86E+11	9.72E-03
			9.74	117353	10380000	5	3	2.83E+11	2.42E-03
			9.70	73850	10380000	3	3	1.72E+11	2.43E-03
			9.63	0	10380000	1	3	2.35E+11	9.80E-03
				117353		5	5	5.16E+11	7.30E-03
				73850		3	5	1.72E+11	4.06E-03
				73850		3	1	6.86E+11	3.24E-03
Fe XXI	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3D^o$	9.512	89813	10603000	9	15	8.36E+12	1.89E-01
			9.588	117353	10547000	5	5	2.04E+12	2.81E-02
			9.583	117353	10553000	5	3	2.26E+11	1.87E-03
			9.548	73850	10547000	3	5	6.19E+12	1.41E-01
			9.543	73850	10553000	3	3	3.44E+12	4.69E-02
			9.482	117353	10664000	5	7	8.43E+12	1.59E-01
			9.476	0	10553000	1	3	4.70E+12	1.90E-01
Fe XXI	$2s^2 2p^2 - 2s^2 2p4d$	$^3P - ^3P^o$	9.50	89813	10620000	9	9	4.54E+12	6.14E-02
			9.558	117353	10580000	5	5	3.34E+12	4.58E-02
			9.518	73850	10580000	3	5	1.13E+12	2.56E-02
			9.460	117353	10688000	5	3	1.91E+12	1.54E-02
			9.421	73850	10688000	3	3	1.16E+12	1.55E-02
			9.356	0	10688000	1	3	1.58E+12	6.24E-02
				73850		3	1	4.53E+12	2.04E-02
Fe XXI	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3D^o$	8.57	89813	11761000	9	15	3.89E+12	7.14E-02
			8.660	117353	11665000	5	3	1.05E+11	7.07E-04
			8.627	73850	11665000	3	3	1.59E+12	1.77E-02
			8.573	0	11665000	1	3	2.16E+12	7.14E-02
			8.558	117353	11802000	5	7	3.91E+12	6.01E-02
				73850		3	5	2.90E+12	5.32E-02
				117353		5	5	9.63E+11	1.06E-02
Fe XXI	$2s^2 2p^2 - 2s^2 2p5d$	$^3P - ^3P^o$	8.53	89813	11810000	9	9	2.14E+12	2.34E-02
			8.552	117353	11810000	5	3	8.86E+11	5.83E-03
			8.521	73850	11810000	3	3	5.38E+11	5.86E-03
			8.467	0	11810000	1	3	7.32E+11	2.36E-02
				117353		5	5	1.59E+12	1.73E-02
				73850		3	5	5.29E+11	9.63E-03
				73850		3	1	2.12E+12	7.70E-03
Fe XXII	$2s^2 2p - 2s2p^2$	$^2P^o - ^2D$	148.91	78850	750380	6	10	7.09E+09	3.93E-02
			161.75	118270	736520	4	4	9.23E+08	3.62E-03
			155.92	118270	759620	4	6	6.16E+09	3.37E-02
			135.77	0	736520	2	4	7.80E+09	4.31E-02
Fe XXII	$2s^2 2p - 2s2p^2$	$^2P^o - ^2P$	115.32	78850	946020	6	6	4.72E+10	9.41E-02
			136.02	118270	853480	4	2	9.59E+09	1.33E-02
			117.17	0	853480	2	2	3.00E+10	6.17E-02
			114.41	118270	992290	4	4	4.03E+10	7.90E-02
			100.777	0	992290	2	4	1.18E+10	3.58E-02
Fe XXII	$2s^2 2p - 2s2p^2$	$^2P^o - ^2S$	111.19	78850	978220	6	2	3.40E+10	2.10E-02
			116.29	118270	978220	4	2	1.98E+10	2.01E-02
			102.226	0	978220	2	2	1.46E+10	2.28E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XXII	$2s^2 2p-2s^2 3d$	$^2P^\circ-^2D$	11.87	78850	8503000	6	10	1.92E+13	6.75E-01
			11.93	118270	8498000	4	4	3.14E+12	6.71E-02
			11.92	118270	8507000	4	6	1.89E+13	6.04E-01
			11.77	0	8498000	2	4	1.64E+13	6.80E-01
Fe XXII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2P$	11.66	78850	8653000	6	6	7.85E+12	1.60E-01
			11.81	118270	8584000	4	2	2.50E+12	2.62E-02
			11.67	118270	8688000	4	4	6.51E+12	1.33E-01
			11.65	0	8584000	2	2	5.26E+12	1.07E-01
			11.51	0	8688000	2	4	1.35E+12	5.38E-02
Fe XXII	$2s^2 2p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2D$	11.46	78850	8803000	6	10	9.96E+12	3.27E-01
			11.60	118270	8740000	4	4	1.60E+12	3.23E-02
			11.46	118270	8845000	4	6	9.99E+12	2.95E-01
			11.44	0	8740000	2	4	8.36E+12	3.28E-01
Fe XXII	$2s^2 2p-2s^2 4s$	$^2P^\circ-^2S$	9.11	78850	11050000	6	2	9.35E+11	3.88E-03
			9.15	118270	11050000	4	2	6.17E+11	3.87E-03
			9.05	0	11050000	2	2	3.18E+11	3.91E-03
Fe XXII	$2s^2 2p-2s^2 4d$	$^2P^\circ-^2D$	9.04	78850	11140000	6	10	6.12E+12	1.25E-01
			9.07	118270	11140000	4	6	6.05E+12	1.12E-01
			9.07	118270	11140000	4	4	1.01E+12	1.25E-02
			8.98	0	11140000	2	4	5.17E+12	1.25E-01
Fe XXIII	$2s^2-2s2p$	$^1S-^1P^\circ$	132.83	0	752840	1	3	1.92E+10	1.52E-01
Fe XXIII	$2s^2-2s3p$	$^1S-^1P^\circ$	10.981	0	9107000	1	3	1.28E+13	6.95E-01
Fe XXIII	$2s^2-2p3s$	$^1S-^1P^\circ$	10.560	0	9470000	1	3	8.61E+11	4.32E-02
Fe XXIII	$2s^2-2p3d$	$^1S-^1P^\circ$	10.175	0	9828000	1	3	7.09E+11	3.30E-02
Fe XXIII	$2s^2-2s4p$	$^1S-^1P^\circ$	8.3029	0	12044000	1	3	5.77E+12	1.79E-01
Fe XXIII	$2s^2-2s5p$	$^1S-^1P^\circ$	7.4722	0	13383000	1	3	2.92E+12	7.33E-02
Fe XXIV	$1s^2 2s-1s^2 2p$	$^2S-^2P^\circ$	209.29	0	477810	2	6	3.36E+09	6.62E-02
			255.10	0	392000	2	2	1.86E+09	1.81E-02
			192.04	0	520720	2	4	4.36E+09	4.82E-02
Fe XXIV	$1s^2 2s-1s^2 3p$	$^2S-^2P^\circ$	10.634	0	9404000	2	6	7.71E+12	3.92E-01
			10.663	0	9378000	2	2	7.68E+12	1.31E-01
			10.619	0	9417000	2	4	7.72E+12	2.61E-01
Fe XXIV	$1s^2 2s-1s^2 4p$	$^2S-^2P^\circ$	7.9893	0	12517000	2	6	3.37E+12	9.67E-02
			7.9962	0	12506000	2	2	3.36E+12	3.22E-02
			7.9859	0	12522000	2	4	3.37E+12	6.45E-02
Fe XXIV	$1s^2 2s-1s^2 5p$	$^2S-^2P^\circ$	7.1690	0	13949000	2	6	1.73E+12	4.00E-02
			7.1690	0	13949000	2	4	1.73E+12	2.66E-02
			7.1690	0	13949000	2	2	1.71E+12	1.32E-02
Fe XXIV	$1s^2 2s-1s^2 6p$	$^2S-^2P^\circ$	6.7870	0	14734000	2	6	9.99E+11	2.07E-02
			6.7870	0	14734000	2	4	1.01E+12	1.39E-02
			6.7870	0	14734000	2	2	1.00E+12	6.91E-03
Fe XXV	$1s^2-1s2p$	$^1S-^1P^\circ$	1.8504	0	[54042420]	1	3	5.18E+14	7.98E-01
Fe XXV	$1s^2-1s3p$	$^1S-^1P^\circ$	1.5732	0	[63565760]	1	3	1.40E+14	1.56E-01
Fe XXV	$1s^2-1s4p$	$^1S-^1P^\circ$	1.4946	0	[66907500]	1	3	5.76E+13	5.79E-02
Fe XXV	$1s^2-1s5p$	$^1S-^1P^\circ$	1.4608	0	[68454700]	1	3	2.90E+13	2.78E-02
Fe XXVI	$1s-2p$	$^2S-^2P^\circ$	1.7798	0	56184600	2	6	2.92E+14	4.16E-01
			1.7835	0	[56070500]	2	2	2.91E+14	1.39E-01
			1.7780	0	[56241600]	2	4	2.92E+14	2.77E-01
Fe XXVI	$1s-3p$	$^2S-^2P^\circ$	1.5028	0	66544600	2	6	7.78E+13	7.90E-02
			1.5035	0	[66510800]	2	2	7.76E+13	2.63E-02
			1.5024	0	[66561500]	2	4	7.79E+13	5.27E-02

**Table 1.** Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines

Species	Transition	Multiplet	$\lambda$ , Å	$E_i$ , cm <sup>-1</sup>	$E_k$ , cm <sup>-1</sup>	$g_i$	$g_k$	$A_{ki}$ , s <sup>-1</sup>	$f_{ik}$
Fe XXVI	$1s-4p$	$^2S-^2P^o$	1.4251	0	70172100	2	6	3.17E+13	2.90E-02
			1.4254	0	[70157900]	2	2	3.17E+13	9.67E-03
			1.4249	0	[70179300]	2	4	3.17E+13	1.93E-02
Fe XXVI	$1s-5p$	$^2S-^2P^o$	1.3918	0	71850300	2	6	1.60E+13	1.39E-02
			1.3919	0	[71843000]	2	2	1.60E+13	4.65E-03
			1.3917	0	[71853900]	2	4	1.60E+13	9.30E-03
Fe XXVI	$1s-6p$	$^2S-^2P^o$	1.3744	0	72757100	2	6	9.18E+12	7.80E-03
			1.3744	0	[72757100]	2	4	9.18E+12	5.20E-03
			1.3744	0	[72757100]	2	2	9.18E+12	2.60E-03
Fe XXVI	$1s-7p$	$^2S-^2P^o$	1.3641	0	73307700	2	6	5.76E+12	4.82E-03
			1.3641	0	[73307700]	2	4	5.75E+12	3.21E-03
			1.3641	0	[73307700]	2	2	5.74E+12	1.60E-03
Fe XXVI	$1s-8p$	$^2S-^2P^o$	1.3575	0	73664800	2	6	3.85E+12	3.19E-03
			1.3575	0	[73664800]	2	4	3.84E+12	2.12E-03
			1.3575	0	[73664800]	2	2	3.84E+12	1.06E-03
Fe XXVI	$1s-9p$	$^2S-^2P^o$	1.3530	0	73909500	2	6	2.70E+12	2.22E-03
			1.3530	0	[73909500]	2	4	2.70E+12	1.48E-03
			1.3530	0	[73909500]	2	2	2.69E+12	7.38E-04
Fe XXVI	$1s-10p$	$^2S-^2P^o$	1.3498	0	74084400	2	6	1.95E+12	1.60E-03
			1.3498	0	[74084400]	2	4	1.96E+12	1.07E-03
			1.3498	0	[74084400]	2	2	1.96E+12	5.35E-04

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
1.3498	Fe XXVI	2	2	5.35E-04	3.5841	S XVI	2	4	1.07E-03	5.7391	Al XIII	2	4	1.93E-02
1.3498	Fe XXVI	2	4	1.07E-03	3.5926	S XVI	2	2	7.38E-04	5.7396	Al XIII	2	2	9.67E-03
1.3530	Fe XXVI	2	2	7.38E-04	3.5926	S XVI	2	4	1.48E-03	6.0000	Al XII	1	3	3.20E-03
1.3530	Fe XXVI	2	4	1.48E-03	3.6045	S XVI	2	2	1.06E-03	6.0134	Al XII	1	3	4.40E-03
1.3575	Fe XXVI	2	2	1.06E-03	3.6045	S XVI	2	4	2.12E-03	6.0322	Al XII	1	3	6.31E-03
1.3575	Fe XXVI	2	4	2.12E-03	3.6221	S XVI	2	2	1.60E-03	6.0525	Al XIII	2	4	5.27E-02
1.3641	Fe XXVI	2	2	1.60E-03	3.6221	S XVI	2	4	3.21E-03	6.0537	Al XIII	2	2	2.63E-02
1.3641	Fe XXVI	2	4	3.21E-03	3.6496	S XVI	2	2	2.60E-03	6.0598	Al XII	1	3	9.53E-03
1.3744	Fe XXVI	2	2	2.60E-03	3.6496	S XVI	2	4	5.20E-03	6.1028	Al XII	1	3	1.54E-02
1.3744	Fe XXVI	2	4	5.20E-03	3.6958	S XVI	2	4	9.30E-03	6.1755	Al XII	1	3	2.75E-02
1.3917	Fe XXVI	2	4	9.30E-03	3.6960	S XVI	2	2	4.65E-03	6.1804	Si XIV	2	4	2.77E-01
1.3919	Fe XXVI	2	2	4.65E-03	3.7311	Ar XVIII	2	4	2.77E-01	6.1858	Si XIV	2	2	1.39E-01
1.4249	Fe XXVI	2	4	1.93E-02	3.7365	Ar XVIII	2	2	1.39E-01	6.3139	Al XII	1	3	5.67E-02
1.4254	Fe XXVI	2	2	9.67E-03	3.7843	S XVI	2	4	1.93E-02	6.3809	Mg XII	2	2	5.35E-04
1.4608	Fe XXV	1	3	2.78E-02	3.7848	S XVI	2	2	9.67E-03	6.3809	Mg XII	2	4	1.07E-03
1.4946	Fe XXV	1	3	5.79E-02	3.8828	S XV	1	3	3.20E-03	6.3960	Mg XII	2	2	7.38E-04
1.5024	Fe XXVI	2	4	5.27E-02	3.8916	S XV	1	3	4.41E-03	6.3960	Mg XII	2	4	1.48E-03
1.5035	Fe XXVI	2	2	2.63E-02	3.9039	S XV	1	3	6.34E-03	6.4173	Mg XII	2	2	1.06E-03
1.5732	Fe XXV	1	3	1.56E-01	3.9219	S XV	1	3	9.57E-03	6.4173	Mg XII	2	4	2.12E-03
1.7780	Fe XXVI	2	4	2.77E-01	3.9488	Ar XVII	1	3	7.75E-01	6.4486	Mg XII	2	2	1.60E-03
1.7835	Fe XXVI	2	2	1.39E-01	3.9501	S XV	1	3	1.54E-02	6.4486	Mg XII	2	4	3.21E-03
1.8504	Fe XXV	1	3	7.98E-01	3.9908	S XVI	2	4	5.27E-02	6.4974	Mg XII	2	4	5.20E-03
2.2895	Ca XX	2	2	5.35E-04	3.9920	S XVI	2	2	2.63E-02	6.4975	Mg XII	2	2	2.60E-03
2.2895	Ca XX	2	4	1.07E-03	3.9978	S XV	1	3	2.76E-02	6.5800	Mg XII	2	4	9.30E-03
2.2949	Ca XX	2	2	7.38E-04	4.0885	S XV	1	3	5.71E-02	6.5802	Mg XII	2	2	4.65E-03
2.2949	Ca XX	2	4	1.48E-03	4.2991	S XV	1	3	1.53E-01	6.6348	Al XII	1	3	1.52E-01
2.3026	Ca XX	2	2	1.06E-03	4.6848	Si XIV	2	4	1.07E-03	6.6480	Si XIII	1	3	7.57E-01
2.3026	Ca XX	2	4	2.12E-03	4.6849	Si XIV	2	2	5.35E-04	6.7378	Mg XII	2	4	1.93E-02
2.3138	Ca XX	2	2	1.60E-03	4.6960	Si XIV	2	2	7.38E-04	6.7382	Mg XII	2	2	9.67E-03
2.3138	Ca XX	2	4	3.21E-03	4.6960	Si XIV	2	4	1.48E-03	6.7870	Fe XXIV	2	2	6.91E-03
2.3313	Ca XX	2	2	2.60E-03	4.7116	Si XIV	2	2	1.06E-03	6.7870	Fe XXIV	2	4	1.39E-02
2.3313	Ca XX	2	4	5.20E-03	4.7116	Si XIV	2	4	2.12E-03	7.1037	Mg XI	1	3	3.19E-03
2.3608	Ca XX	2	4	9.30E-03	4.7274	S XVI	2	4	2.77E-01	7.1058	Mg XII	2	4	5.27E-02
2.3610	Ca XX	2	2	4.65E-03	4.7328	S XVI	2	2	1.39E-01	7.1069	Mg XII	2	2	2.63E-02
2.4173	Ca XX	2	4	1.93E-02	4.7345	Si XIV	2	4	3.21E-03	7.1194	Mg XI	1	3	4.40E-03
2.4177	Ca XX	2	2	9.67E-03	4.7346	Si XIV	2	2	1.60E-03	7.1415	Mg XI	1	3	6.31E-03
2.5138	Ca XIX	1	3	2.77E-02	4.7704	Si XIV	2	4	5.20E-03	7.1690	Fe XXIV	2	2	1.32E-02
2.5490	Ca XX	2	4	5.27E-02	4.7705	Si XIV	2	2	2.60E-03	7.1690	Fe XXIV	2	4	2.66E-02
2.5501	Ca XX	2	2	2.63E-02	4.8310	Si XIV	2	4	9.30E-03	7.1709	Al XIII	2	4	2.77E-01
2.5714	Ca XIX	1	3	5.75E-02	4.8312	Si XIV	2	2	4.65E-03	7.1741	Mg XI	1	3	9.52E-03
2.7054	Ca XIX	1	3	1.55E-01	4.9468	Si XIV	2	4	1.93E-02	7.1763	Al XIII	2	2	1.39E-01
2.8294	Ar XVIII	2	2	5.35E-04	4.9472	Si XIV	2	2	9.67E-03	7.2247	Mg XI	1	3	1.53E-02
2.8294	Ar XVIII	2	4	1.07E-03	5.0387	S XV	1	3	7.67E-01	7.3103	Mg XI	1	3	2.73E-02
2.8361	Ar XVIII	2	2	7.38E-04	5.1347	Si XIII	1	3	3.20E-03	7.4722	Fe XXIII	1	3	7.33E-02
2.8361	Ar XVIII	2	4	1.48E-03	5.1462	Si XIII	1	3	4.41E-03	7.4731	Mg XI	1	3	5.65E-02
2.8455	Ar XVIII	2	2	1.06E-03	5.1623	Si XIII	1	3	6.32E-03	7.5960	Na XI	2	2	5.35E-04
2.8455	Ar XVIII	2	4	2.12E-03	5.1861	Si XIII	1	3	9.54E-03	7.5960	Na XI	2	4	1.07E-03
2.8594	Ar XVIII	2	2	1.60E-03	5.2168	Si XIV	2	4	5.27E-02	7.6140	Na XI	2	2	7.38E-04
2.8594	Ar XVIII	2	4	3.21E-03	5.2180	Si XIV	2	2	2.63E-02	7.6140	Na XI	2	4	1.48E-03
2.8810	Ar XVIII	2	2	2.60E-03	5.2231	Si XIII	1	3	1.54E-02	7.6393	Na XI	2	4	2.12E-03
2.8810	Ar XVIII	2	4	5.20E-03	5.2856	Si XIII	1	3	2.75E-02	7.6394	Na XI	2	2	1.06E-03
2.9175	Ar XVIII	2	4	9.30E-03	5.4046	Si XIII	1	3	5.68E-02	7.6766	Na XI	2	4	3.21E-03
2.9177	Ar XVIII	2	2	4.65E-03	5.4352	Al XIII	2	2	5.35E-04	7.6767	Na XI	2	2	1.60E-03
2.9873	Ar XVIII	2	4	1.93E-02	5.4352	Al XIII	2	4	1.07E-03	7.7347	Na XI	2	4	5.20E-03
2.9878	Ar XVIII	2	2	9.67E-03	5.4481	Al XIII	2	2	7.38E-04	7.7349	Na XI	2	2	2.60E-03
3.0185	Ca XX	2	4	2.77E-01	5.4481	Al XIII	2	4	1.48E-03	7.7573	Al XII	1	3	7.50E-01
3.0239	Ca XX	2	2	1.39E-01	5.4662	Al XIII	2	4	2.12E-03	7.8331	Na XI	2	4	9.30E-03
3.0950	Ar XVII	1	3	1.55E-02	5.4663	Al XIII	2	2	1.06E-03	7.8333	Na XI	2	2	4.65E-03
3.1281	Ar XVII	1	3	2.76E-02	5.4929	Al XIII	2	2	1.60E-03	7.8505	Mg XI	1	3	1.51E-01
3.1502	Ar XVIII	2	4	5.27E-02	5.4929	Al XIII	2	4	3.21E-03	7.9859	Fe XXIV	2	4	6.45E-02
3.1514	Ar XVIII	2	2	2.63E-02	5.5344	Al XIII	2	4	5.20E-03	7.9962	Fe XXIV	2	2	3.22E-02
3.1772	Ca XIX	1	3	7.82E-01	5.5346	Al XIII	2	2	2.60E-03	8.0209	Na XI	2	4	1.93E-02
3.1996	Ar XVII	1	3	5.73E-02	5.6048	Al XIII	2	4	9.30E-03	8.0214	Na XI	2	2	9.67E-03
3.3654	Ar XVII	1	3	1.55E-01	5.6050	Al XIII	2	2	4.65E-03	8.3029	Fe XXIII	1	3	1.79E-01
3.5841	S XVI	2	2	5.35E-04	5.6807	Si XIII	1	3	1.52E-01	8.4192	Mg XII	2	4	2.77E-01

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
8.4246	Mg XII	2	2	1.39E-01	9.7080	Ne X	2	4	1.93E-02	11.9882	F IX	2	4	1.93E-02
8.4591	Na XI	2	4	5.27E-02	9.7085	Ne X	2	2	9.67E-03	11.9886	F IX	2	2	9.67E-03
8.4603	Na XI	2	2	2.63E-02	9.74	Fe XXI	5	3	2.42E-03	11.99	Ca XVIII	2	2	6.74E-03
8.467	Fe XXI	1	3	2.36E-02	9.77	Fe XIX	3	5	2.89E-02	11.99	Ca XVIII	2	4	1.35E-02
8.521	Fe XXI	3	3	5.86E-03	9.81	Fe XIX	5	7	5.39E-02	12.12	Fe XVII	1	3	7.42E-01
8.5417	Na X	1	3	3.18E-03	9.88	Fe XVIII	4	4	1.59E-03	12.1321	Ne X	2	4	2.77E-01
8.552	Fe XXI	5	3	5.83E-03	9.88	Fe XVIII	4	2	3.35E-03	12.1375	Ne X	2	2	1.39E-01
8.558	Fe XXI	5	7	6.01E-02	9.98	Fe XVIII	2	4	1.57E-02	12.259	Fe XXI	3	5	1.33E-01
8.5605	Na X	1	3	4.40E-03	9.98	Fe XVIII	2	2	1.32E-02	12.285	Fe XXI	1	3	9.70E-01
8.573	Fe XXI	1	3	7.14E-02	9.991	Fe XX	4	2	6.42E-02	12.325	Fe XXI	5	5	2.37E-01
8.5869	Na X	1	3	6.30E-03	9.991	Fe XX	4	4	1.28E-01	12.325	Fe XXI	3	5	7.25E-01
8.6257	Na X	1	3	9.50E-03	10.0232	Na XI	2	4	2.77E-01	12.380	Fe XXI	5	7	8.09E-01
8.627	Fe XXI	3	3	1.77E-02	10.0286	Na XI	2	2	1.39E-01	12.392	Fe XXI	5	5	1.44E-01
8.660	Fe XXI	5	3	7.07E-04	10.03	Fe XVIII	4	6	4.92E-02	12.397	Fe XXI	3	3	2.40E-01
8.6862	Na X	1	3	1.53E-02	10.12	Fe XX	4	6	1.90E-01	12.465	Fe XXI	5	3	9.56E-03
8.7884	Na X	1	3	2.72E-02	10.12	Fe XVII	1	3	5.05E-02	12.636	Ca XVIII	2	2	1.30E-02
8.98	Fe XXII	2	4	1.25E-01	10.175	Fe XXIII	1	3	3.30E-02	12.636	Ca XVIII	2	4	2.60E-02
8.9828	Na X	1	3	5.63E-02	10.2385	Ne X	2	4	5.27E-02	12.6434	F IX	2	4	5.27E-02
9.05	Fe XXII	2	2	3.91E-03	10.2396	Ne X	2	2	2.63E-02	12.6445	F IX	2	2	2.63E-02
9.051	Fe XX	4	2	2.37E-02	10.33	Fe XVIII	4	4	3.96E-03	12.82	Fe XX	4	4	6.29E-01
9.051	Fe XX	4	4	4.74E-02	10.33	Fe XVIII	4	2	7.81E-03	12.82	Fe XX	4	6	9.44E-01
9.07	Fe XXII	4	4	1.25E-02	10.33	Fe XVIII	4	4	3.91E-02	12.830	Fe XVIII	4	4	2.23E-02
9.07	Fe XXII	4	6	1.12E-01	10.37	Fe XVIII	4	4	1.97E-02	12.844	Fe XVIII	4	2	4.45E-03
9.149	Fe XX	4	6	7.03E-02	10.44	Fe XVIII	2	4	3.92E-02	12.847	Fe XVIII	4	6	4.90E-02
9.15	Fe XXII	4	2	3.87E-03	10.44	Fe XVIII	2	4	1.55E-02	12.881	Fe XVIII	4	4	5.43E-03
9.1688	Mg XI	1	3	7.42E-01	10.44	Fe XVIII	2	2	3.09E-02	13.001	Fe XVIII	2	4	8.80E-03
9.1936	Ne X	2	2	5.35E-04	10.49	Fe XVIII	2	4	7.82E-03	13.015	Fe XVIII	2	2	1.76E-02
9.1936	Ne X	2	4	1.07E-03	10.513	Ne IX	1	3	6.28E-03	13.053	Fe XVIII	2	4	5.36E-02
9.2154	Ne X	2	4	1.48E-03	10.52	Fe XVIII	4	6	7.85E-02	13.143	F VIII	1	3	4.37E-03
9.2155	Ne X	2	2	7.38E-04	10.560	Fe XXIII	1	3	4.32E-02	13.159	Fe XVIII	4	2	4.87E-02
9.2461	Ne X	2	4	2.12E-03	10.5650	Ne IX	1	3	9.47E-03	13.185	F VIII	1	3	6.26E-03
9.2462	Ne X	2	2	1.06E-03	10.619	Fe XXIV	2	4	2.61E-01	13.215	Fe XVIII	4	4	1.59E-02
9.29	Fe XIX	5	3	9.51E-05	10.6426	Ne IX	1	3	1.53E-02	13.244	F VIII	1	3	9.43E-03
9.2912	Ne X	2	4	3.21E-03	10.663	Fe XXIV	2	2	1.31E-01	13.319	Fe XVIII	4	2	1.84E-02
9.2913	Ne X	2	2	1.60E-03	10.7643	Ne IX	1	3	2.71E-02	13.334	F VIII	1	3	1.52E-02
9.34	Fe XIX	5	7	3.16E-02	10.981	Fe XXIII	1	3	6.95E-01	13.339	Fe XVIII	2	2	4.80E-02
9.356	Fe XXI	1	3	6.24E-02	11.0003	Ne IX	1	3	5.61E-02	13.355	Fe XVIII	4	4	9.18E-02
9.36	Fe XIX	1	3	9.44E-03	11.0027	Na X	1	3	7.34E-01	13.374	Fe XVIII	4	6	1.41E-01
9.3616	Ne X	2	4	5.20E-03	11.02	Fe XVII	1	3	9.35E-02	13.397	Fe XVIII	2	4	1.57E-01
9.3617	Ne X	2	2	2.60E-03	11.13	Fe XVII	1	3	3.46E-01	13.4471	Ne IX	1	3	7.24E-01
9.37	Fe XIX	3	3	2.36E-03	11.3529	F IX	2	2	5.35E-04	13.488	F VIII	1	3	2.70E-02
9.421	Fe XXI	3	3	1.55E-02	11.3529	F IX	2	4	1.07E-03	13.503	Fe XVIII	2	2	7.26E-02
9.4330	Na X	1	3	1.50E-01	11.3798	F IX	2	4	1.48E-03	13.541	Fe XVIII	2	4	3.62E-02
9.460	Fe XXI	5	3	1.54E-02	11.3799	F IX	2	2	7.38E-04	13.781	F VIII	1	3	5.57E-02
9.476	Fe XXI	1	3	1.90E-01	11.4177	F IX	2	4	2.12E-03	13.823	Fe XVII	1	3	3.31E-01
9.4807	Ne X	2	4	9.30E-03	11.4178	F IX	2	2	1.06E-03	13.919	Fe XVIII	4	4	2.56E-02
9.4809	Ne X	2	2	4.65E-03	11.44	Fe XXII	2	4	3.28E-01	13.954	Fe XVIII	4	6	2.30E-01
9.482	Fe XXI	5	7	1.59E-01	11.46	Fe XXII	4	6	2.95E-01	14.049	Ca XVIII	2	4	6.26E-02
9.518	Fe XXI	3	5	2.56E-02	11.4734	F IX	2	4	3.21E-03	14.059	Ca XVIII	2	2	3.13E-02
9.52	Fe XIX	5	3	2.76E-03	11.4735	F IX	2	2	1.60E-03	14.121	Fe XVIII	2	4	2.52E-01
9.52	Fe XIX	5	7	2.86E-02	11.51	Fe XXII	2	4	5.38E-02	14.136	Fe XVIII	4	2	1.27E-01
9.543	Fe XXI	3	3	4.69E-02	11.5466	Ne IX	1	3	1.49E-01	14.152	Fe XVIII	4	4	1.05E-01
9.548	Fe XXI	3	5	1.41E-01	11.5603	F IX	2	4	5.20E-03	14.203	Fe XVIII	4	6	9.39E-01
9.558	Fe XXI	5	5	4.58E-02	11.5604	F IX	2	2	2.60E-03	14.208	Fe XVIII	4	4	6.33E-01
9.57	Fe XIX	5	3	3.39E-04	11.60	Fe XXII	4	4	3.23E-02	14.257	Fe XVIII	4	2	1.99E-01
9.583	Fe XXI	5	3	1.87E-03	11.62	Ca XVIII	2	2	3.99E-03	14.344	Fe XVIII	2	2	5.01E-01
9.588	Fe XXI	5	5	2.81E-02	11.62	Ca XVIII	2	4	7.98E-03	14.35	Fe XIX	5	5	2.77E-02
9.59	Fe XIX	1	3	1.10E-02	11.65	Fe XXII	2	2	1.07E-01	14.361	Fe XVIII	2	4	1.04E+00
9.61	Fe XIX	3	3	2.74E-03	11.67	Fe XXII	4	4	1.33E-01	14.3716	O VIII	2	4	1.07E-03
9.63	Fe XXI	1	3	9.80E-03	11.7074	F IX	2	4	9.30E-03	14.3717	O VIII	2	2	5.35E-04
9.64	Fe XIX	1	3	3.37E-02	11.7076	F IX	2	2	4.65E-03	14.373	Fe XVIII	4	6	3.52E-01
9.65	Fe XIX	3	3	8.41E-03	11.77	Fe XXII	2	4	6.80E-01	14.394	Fe XVIII	4	4	3.81E-02
9.68	Fe XIX	5	5	5.84E-03	11.81	Fe XXII	4	2	2.62E-02	14.4057	O VIII	2	4	1.48E-03
9.68	Fe XIX	5	7	3.27E-02	11.92	Fe XXII	4	6	6.04E-01	14.4058	O VIII	2	2	7.38E-04
9.70	Fe XXI	3	3	2.43E-03	11.93	Fe XXII	4	4	6.71E-02	14.418	Fe XVIII	2	4	2.50E-01



**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
14.44	Fe XIX	5	3	9.18E-03	19.3612	N VII	2	4	9.30E-03	25.71	Ca XIII	5	5	3.94E-02
14.4537	O VIII	2	4	2.12E-03	19.3614	N VII	2	2	4.65E-03	25.74	Ca XIII	1	3	5.55E-01
14.4538	O VIII	2	2	1.06E-03	19.56	Ca XVII	1	3	6.54E-01	25.8302	C VI	2	4	3.21E-03
14.458	F VIII	1	3	1.48E-01	19.8257	N VII	2	4	1.93E-02	25.8303	C VI	2	2	1.60E-03
14.468	Fe XVIII	2	2	1.96E-01	19.8261	N VII	2	2	9.67E-03	25.85	Ca XIII	3	3	1.31E-02
14.5242	O VIII	2	4	3.21E-03	20.86	Ca XVI	2	4	5.04E-02	25.87	Ca XIII	3	5	2.18E-02
14.5243	O VIII	2	2	1.60E-03	20.9095	N VII	2	4	5.27E-02	25.88	Ca XIII	1	3	5.21E-02
14.53	Fe XIX	3	5	1.52E-02	20.9106	N VII	2	2	2.63E-02	25.88	Ca XIII	5	3	1.71E-01
14.60	Fe XIX	1	3	3.63E-02	20.95	Ca XVI	2	2	1.00E-01	25.96	Ca XIII	5	3	1.26E-01
14.610	Fe XVIII	2	4	1.51E-02	21.02	Ca XVI	4	4	1.25E-01	25.97	Ca XIII	5	5	3.76E-01
14.63	Fe XIX	3	3	9.06E-03	21.11	Ca XVI	4	2	2.49E-02	26.0260	C VI	2	4	5.20E-03
14.6343	O VIII	2	4	5.20E-03	21.147	Ar XIV	4	6	1.14E-01	26.0261	C VI	2	2	2.60E-03
14.6344	O VIII	2	2	2.60E-03	21.45	Ca XVI	2	4	6.63E-01	26.03	Ca XIII	5	7	4.49E-01
14.67	Fe XIX	3	1	1.20E-02	21.6019	O VII	1	3	6.96E-01	26.04	Ca XIII	3	3	1.70E-01
14.67	Fe XIX	5	7	5.16E-02	21.61	Ca XVI	4	6	5.92E-01	26.06	Ca XIII	5	5	8.01E-02
14.73	Fe XIX	5	3	6.11E-04	21.62	Ca XVI	4	4	6.57E-02	26.07	Ca XIII	1	3	1.69E-01
14.73	Fe XIX	5	5	9.15E-03	22.373	Ar XV	1	3	3.31E-02	26.12	Ca XIII	5	3	5.33E-03
14.8205	O VIII	2	4	9.30E-03	22.550	Ca XV	1	3	3.06E-01	26.13	Ca XIII	3	3	1.25E-01
14.8207	O VIII	2	2	4.65E-03	22.635	Ca XV	3	5	1.27E-01	26.13	Ca XIII	3	5	2.08E-01
14.90	Fe XIX	1	3	6.04E-02	22.640	Ca XV	3	3	7.63E-02	26.16	Ca XIII	1	3	4.98E-01
14.93	Fe XIX	3	3	1.50E-02	22.730	Ca XV	5	5	2.29E-01	26.209	Ar XIII	1	3	4.76E-02
14.93	Fe XIX	3	5	4.52E-02	22.730	Ca XV	1	3	9.27E-01	26.22	Ca XIII	3	5	3.98E-01
14.97	Fe XIX	5	3	3.93E-02	22.735	Ca XV	5	3	7.60E-02	26.277	Ar XIII	3	3	4.75E-02
14.9823	F IX	2	4	2.77E-01	22.759	Ca XV	3	5	6.95E-01	26.29	Ca XIII	3	3	1.32E-01
14.9877	F IX	2	2	1.39E-01	22.777	Ca XV	5	7	7.78E-01	26.32	Ca XIII	1	3	5.29E-01
15.015	Fe XVII	1	3	2.95E+00	22.821	Ca XV	3	3	2.31E-01	26.3572	C VI	2	4	9.30E-03
15.14	Fe XIX	1	3	3.88E-02	22.854	Ca XV	5	5	1.38E-01	26.3574	C VI	2	2	4.65E-03
15.17	Fe XIX	3	3	3.88E-02	22.917	Ca XV	5	3	9.20E-03	26.360	Ar XIII	5	3	4.73E-02
15.1760	O VIII	2	4	1.93E-02	22.97	Ar XIII	3	5	2.58E-02	26.442	Ca XI	1	3	2.86E-02
15.1765	O VIII	2	2	9.67E-03	23.0051	S XIV	2	4	6.03E-02	26.446	Ar XIII	3	5	5.12E-02
15.209	Fe XVIII	4	2	1.26E-02	23.0151	S XIV	2	2	3.01E-02	26.4564	Si XII	2	4	1.29E-02
15.450	Fe XVIII	2	2	1.23E-02	23.03	Ar XIII	5	5	4.62E-02	26.4585	Si XII	2	2	6.45E-03
15.616	Fe XVIII	4	4	6.39E-03	23.570	Ar XIII	3	5	4.10E-03	26.530	Ar XIII	5	5	1.98E-02
15.625	Fe XVIII	4	6	5.76E-02	23.637	Ar XIII	5	5	7.35E-03	26.72	Ca XIII	5	7	2.04E-01
15.766	Fe XVIII	4	2	1.67E-02	23.73	S XII	4	6	1.31E-02	26.75	Ca XIII	5	5	3.63E-02
15.870	Fe XVIII	2	4	6.29E-02	23.771	N VI	1	3	5.46E-02	26.89	S XII	4	6	5.93E-02
16.005	Fe XVIII	4	4	8.20E-02	24.086	Ca XIV	4	4	5.98E-01	26.92	Ca XIII	3	5	1.81E-01
16.0055	O VIII	2	4	5.27E-02	24.133	Ca XIV	4	6	8.95E-01	26.962	Ca XI	1	3	3.04E-01
16.0067	O VIII	2	2	2.63E-02	24.42	S XII	4	6	2.17E-02	26.9896	C VI	2	4	1.93E-02
16.026	Fe XVIII	2	2	6.55E-02	24.590	S XIII	1	3	1.61E-01	26.9901	C VI	2	2	9.67E-03
16.272	Fe XVIII	2	4	3.23E-02	24.737	Ar XV	1	3	6.36E-01	27.380	Ca XII	4	4	1.83E-02
16.807	F VIII	1	3	7.11E-01	24.7792	N VII	2	4	2.77E-01	27.413	Ca XII	4	6	1.65E-01
16.9223	O VII	1	3	3.14E-03	24.7846	N VII	2	2	1.39E-01	27.442	Ar XIII	1	3	2.00E-01
16.9584	O VII	1	3	4.34E-03	24.900	N VI	1	3	1.44E-01	27.470	Ar XIV	2	4	6.54E-01
17.0092	O VII	1	3	6.22E-03	25.040	Ar XII	4	6	1.91E-01	27.517	Ar XIII	3	3	4.99E-02
17.0860	O VII	1	3	9.37E-03	25.327	Ca XI	1	3	6.52E-01	27.517	Ar XIII	3	5	1.49E-01
17.2000	O VII	1	3	1.51E-02	25.420	Ar XIV	2	4	5.10E-02	27.607	Ca XII	2	4	1.81E-01
17.3960	O VII	1	3	2.68E-02	25.51	Ca XIII	5	5	8.39E-02	27.608	Ar XIII	5	3	1.99E-03
17.7680	O VII	1	3	5.52E-02	25.53	Ca XIII	5	7	4.70E-01	27.608	Ar XIII	5	5	2.98E-02
18.6288	O VII	1	3	1.46E-01	25.55	Ca XIII	5	3	5.59E-03	27.608	Ar XIII	5	7	1.66E-01
18.691	Ca XVIII	2	4	2.49E-01	25.5587	C VI	2	4	1.07E-03	27.629	Ar XIV	4	6	5.85E-01
18.732	Ca XVIII	2	2	1.24E-01	25.5588	C VI	2	2	5.35E-04	27.642	Ar XIV	4	4	6.50E-02
18.7747	N VII	2	2	5.35E-04	25.567	Ar XIV	4	4	1.27E-01	27.88	Fe XVI	2	4	5.02E-03
18.7747	N VII	2	4	1.07E-03	25.57	S XII	2	4	4.20E-02	27.895	Ca XII	4	4	8.57E-02
18.818	Ar XV	1	3	1.66E-01	25.6194	C VI	2	4	1.48E-03	27.8967	Si XII	2	4	2.47E-02
18.8193	N VII	2	2	7.38E-04	25.6195	C VI	2	2	7.38E-04	27.9006	Si XII	2	2	1.23E-02
18.8193	N VII	2	4	1.48E-03	25.6585	Si XII	2	4	7.65E-03	27.973	Ca XII	4	6	7.70E-01
18.8819	N VII	2	4	2.12E-03	25.6598	Si XII	2	2	3.83E-03	27.973	Ca XII	4	4	5.34E-01
18.8820	N VII	2	2	1.06E-03	25.66	S XII	4	4	4.18E-03	28.095	Ca XII	4	2	1.76E-01
18.9671	O VIII	2	4	2.77E-01	25.66	S XII	4	6	3.77E-02	28.131	Ca XII	2	4	8.50E-01
18.9725	O VIII	2	2	1.39E-01	25.67	Ca XIII	3	5	4.17E-01	28.210	Ca XII	2	4	2.12E-01
18.9741	N VII	2	4	3.21E-03	25.69	Ca XIII	5	3	1.32E-02	28.222	S XII	2	4	1.26E-01
18.9742	N VII	2	2	1.60E-03	25.7048	C VI	2	2	1.06E-03	28.327	S XII	4	4	1.25E-02
19.1179	N VII	2	4	5.20E-03	25.7048	C VI	2	4	2.12E-03	28.327	S XII	4	6	1.12E-01
19.1180	N VII	2	2	2.60E-03	25.71	Ca XIII	3	3	1.39E-01	28.335	Ca XII	2	2	1.74E-01

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
28.4652	C VI	2	4	5.27E-02	31.5120	Ar IX	1	3	1.53E-01	35.203	S XII	2	2	9.32E-02
28.4663	C VI	2	2	2.63E-02	31.6213	Si XI	1	3	4.15E-05	35.2116	Ca XI	1	3	2.32E-01
28.4766	Si XI	1	3	4.01E-03	31.653	Ca XII	4	4	6.64E-03	35.275	S XII	4	4	1.16E-01
28.478	Ca XII	4	6	3.47E-01	31.661	Ca XII	4	6	5.98E-02	35.366	S XII	4	2	2.32E-02
28.505	Ca XII	4	4	3.82E-02	31.742	Ar XIII	3	5	2.54E-02	35.366	Mg X	2	2	1.65E-03
28.616	Ca XII	4	4	3.84E-02	31.864	Ar XIII	5	5	4.55E-02	35.366	Mg X	2	4	3.31E-03
28.67	Fe XVI	2	4	7.55E-03	31.956	Ca XII	2	4	6.57E-02	35.369	Ar XI	5	7	2.15E-01
28.680	Ca XII	4	2	7.59E-03	32.0552	C V	1	3	6.09E-03	35.398	Ar XI	5	5	3.83E-02
28.751	Ca XII	2	4	1.52E-02	32.105	Ca XII	4	2	1.77E-02	35.469	Ar XI	5	3	2.54E-03
28.787	N VI	1	3	6.75E-01	32.1657	Fe XVI	2	4	2.21E-02	35.580	Ar XI	3	5	1.90E-01
28.864	Ca XII	2	4	3.81E-01	32.1901	C V	1	3	9.17E-03	35.651	Ar XI	3	3	6.33E-02
28.916	Ca XIII	5	7	5.45E-02	32.1916	Fe XVI	2	2	1.11E-02	35.700	Ar XI	1	3	2.52E-01
28.926	S XIII	1	3	3.32E-02	32.242	S XIII	1	3	6.13E-01	35.827	Mg X	2	2	2.42E-03
28.930	Ca XII	2	2	3.01E-02	32.281	Ca XII	4	4	8.82E-02	35.827	Mg X	2	4	4.84E-03
28.959	Ca XIII	5	5	9.72E-03	32.3998	C V	1	3	1.48E-02	35.8340	Ar IX	1	3	3.33E-01
28.963	Ca XIII	5	3	6.48E-04	32.417	Ca XII	2	2	7.02E-02	35.9321	Si X	4	6	4.53E-02
29.044	Ar X	4	4	3.39E-03	32.450	Ar X	4	2	3.40E-02	36.398	S XII	2	4	6.43E-01
29.104	Ar X	4	6	3.04E-02	32.550	Ar X	4	2	1.96E-03	36.518	Mg X	2	2	3.74E-03
29.118	Ar XIII	1	3	3.01E-01	32.550	Ar X	4	4	9.79E-03	36.518	Mg X	2	4	7.48E-03
29.165	Ca XIII	3	5	4.83E-02	32.597	Ca XII	2	4	3.50E-02	36.5373	Ar X	4	4	1.50E-02
29.169	Ca XIII	3	3	1.61E-02	32.610	Ar X	4	6	1.10E-01	36.5600	Ar X	4	6	1.35E-01
29.191	Ar XIII	3	1	9.98E-02	32.641	Ar X	2	2	3.38E-02	36.564	S XII	4	6	5.76E-01
29.197	Ar X	2	4	3.37E-02	32.6670	Ar IX	1	3	2.78E-01	36.573	S XII	4	4	6.40E-02
29.202	Ar XIII	3	3	7.48E-02	32.67	S XII	2	4	1.92E-02	36.6715	Al XI	2	4	5.82E-02
29.207	Ca XIII	1	3	6.43E-02	32.742	Ar X	2	4	3.89E-03	36.6822	Al XI	2	2	2.91E-02
29.217	Ar XIII	3	5	1.25E-01	32.742	Ar X	2	2	7.78E-03	36.7490	Fe XVI	2	4	4.85E-02
29.293	Ar XIV	2	2	2.23E-02	32.7542	C V	1	3	2.61E-02	36.7800	Ar X	2	4	1.49E-01
29.305	Ar XIII	5	3	7.47E-02	32.81	S XII	4	4	1.91E-03	36.8030	Fe XVI	2	2	2.42E-02
29.320	Ar XIII	5	5	2.23E-01	32.81	S XII	4	6	1.72E-02	36.8097	B V	2	4	1.07E-03
29.320	Ar XIII	1	3	9.08E-01	33.007	Al XI	2	2	1.22E-02	36.8098	B V	2	2	5.35E-04
29.350	Ar XIII	3	5	6.81E-01	33.007	Al XI	2	4	2.44E-02	36.8971	B V	2	4	1.48E-03
29.370	Ar XIII	5	7	7.62E-01	33.4262	C V	1	3	5.36E-02	36.8972	B V	2	2	7.38E-04
29.405	Ar XIII	3	3	2.26E-01	33.5133	Si XI	1	3	1.53E-01	36.9829	Ar IX	1	3	5.11E-02
29.416	Al XI	2	2	1.67E-03	33.568	Ar XI	5	3	4.92E-03	37.0200	B V	2	4	2.12E-03
29.416	Al XI	2	4	3.34E-03	33.650	Ar XI	5	7	4.13E-01	37.0201	B V	2	2	1.06E-03
29.454	Ar XIII	5	5	1.36E-01	33.676	Ar XI	5	5	7.35E-02	37.160	Si X	2	4	6.13E-02
29.489	Ar XIV	4	2	2.21E-02	33.732	Ar XI	3	3	1.22E-01	37.198	Si X	4	6	5.51E-02
29.510	Ar XIII	5	3	9.03E-03	33.7342	C VI	2	4	2.77E-01	37.2007	B V	2	4	3.21E-03
29.633	Ca XIII	5	3	4.21E-02	33.7396	C VI	2	2	1.39E-01	37.2008	B V	2	2	1.60E-03
29.793	Al XI	2	2	2.44E-03	33.775	Ar XI	1	3	4.89E-01	37.256	Si X	4	4	6.11E-03
29.793	Al XI	2	4	4.88E-03	33.840	Ar XI	3	5	3.66E-01	37.3464	Ar X	4	4	7.26E-02
29.849	Ca XIII	3	3	4.18E-02	34.099	Ar XI	5	3	1.61E-01	37.3849	Ar X	4	2	9.47E-02
29.889	Ca XIII	1	3	4.17E-02	34.132	S XII	2	2	5.31E-02	37.4300	Ar X	4	6	6.52E-01
29.93	Fe XVI	2	4	1.22E-02	34.2380	Si X	4	6	2.16E-02	37.4772	Ar X	4	4	4.72E-01
30.077	S XIII	1	3	2.61E-02	34.240	Ar XI	5	5	3.59E-01	37.4827	B V	2	4	5.20E-03
30.3218	Si XI	1	3	6.09E-02	34.268	Ar XI	3	3	1.61E-01	37.4828	B V	2	2	2.60E-03
30.376	Al XI	2	2	3.79E-03	34.286	S XII	4	2	5.29E-02	37.6000	Ar X	2	4	7.21E-01
30.376	Al XI	2	4	7.59E-03	34.310	S X	4	6	1.89E-01	37.6228	Ar X	4	2	1.64E-01
30.4270	S XIV	2	4	2.37E-01	34.313	Ar XI	1	3	1.60E-01	37.6390	Ar X	2	2	3.77E-01
30.4468	Ca XI	1	3	2.34E+00	34.330	Ar XI	5	7	4.20E-01	37.644	Mg X	2	2	6.29E-03
30.4690	S XIV	2	2	1.19E-01	34.344	Ar XI	5	3	5.01E-03	37.644	Mg X	2	4	1.26E-02
30.580	Ar XII	4	6	1.23E-01	34.349	Ar XI	5	5	7.50E-02	37.7325	Ar X	2	4	1.88E-01
30.773	Ca XII	4	2	1.24E-02	34.410	Ar XI	3	5	1.98E-01	37.773	S XI	5	7	1.50E-01
30.906	Ar X	4	4	1.05E-02	34.516	Ar XI	3	3	1.25E-01	37.810	Ar XI	5	5	2.83E-02
30.960	Ar X	4	6	9.42E-02	34.520	Ar XI	3	5	3.73E-01	37.8801	Ar X	2	2	1.62E-01
31.0121	Si XII	2	4	5.89E-02	34.533	S XII	2	4	2.60E-01	37.9598	B V	2	4	9.30E-03
31.0227	Si XII	2	2	2.94E-02	34.561	Ar XI	1	3	4.97E-01	37.9600	B V	2	2	4.65E-03
31.054	S XI	5	7	1.65E-01	34.586	S XII	4	6	2.34E-01	38.018	Ar XI	3	5	1.56E-02
31.060	Ca XII	2	2	1.23E-02	34.670	Ar XII	4	6	5.50E-02	38.2135	Ar X	4	4	4.45E-02
31.080	Ar X	2	4	1.04E-01	34.690	S XII	4	4	2.59E-02	38.2300	Ar X	4	6	3.67E-01
31.0826	Si XI	1	3	1.47E-02	34.780	Ar XII	4	4	3.66E-02	38.373	Ar X	4	4	4.05E-02
31.313	Al XI	2	2	6.39E-03	34.880	Ar XII	4	2	1.82E-02	38.4276	Ar X	4	2	8.84E-03
31.313	Al XI	2	4	1.27E-02	34.9728	C V	1	3	1.41E-01	38.4790	Ar X	2	4	1.77E-02
31.347	Ar XII	4	4	5.79E-01	35.0239	Ar IX	1	3	5.24E-01	38.573	Ar XI	5	5	1.00E-02
31.389	Ar XII	4	6	8.68E-01	35.112	S XII	2	4	4.67E-02	38.6090	Si XI	1	3	3.36E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
38.620	Ar XI	5	7	5.60E-02	44.2150	Si IX	3	5	1.39E-01	48.2970	Al XI	2	4	2.24E-01
38.625	Ar XI	5	3	6.67E-04	44.2490	Si IX	5	7	1.56E-01	48.3379	Al XI	2	2	1.11E-01
38.641	Ar X	2	4	4.03E-01	44.2711	Ar X	2	4	3.60E-02	48.3400	Mg IX	1	3	1.43E-01
38.6961	Ar X	2	2	3.51E-02	44.2809	Mg IX	1	3	2.29E-02	48.3851	Si X	2	4	4.40E-02
38.789	Ar XI	3	5	4.98E-02	44.2908	Si IX	5	5	2.78E-02	48.4358	Si X	2	2	8.79E-02
38.842	Ar XI	3	3	1.66E-02	44.518	Si X	2	2	7.78E-03	48.5494	Si X	4	4	1.09E-01
38.8707	B V	2	4	1.93E-02	44.657	Si X	4	2	7.76E-03	48.5531	Na IX	2	2	1.18E-02
38.8711	B V	2	2	9.67E-03	44.691	Si X	2	4	1.35E-02	48.5531	Na IX	2	4	2.35E-02
38.8821	S IX	5	5	6.66E-02	44.7039	Al IX	2	4	5.82E-02	48.5855	B V	2	4	2.77E-01
38.900	Ar XI	1	3	6.62E-02	44.719	Si X	2	2	2.70E-02	48.5909	B V	2	2	1.39E-01
38.956	Fe XV	1	3	1.09E-01	44.7249	Na IX	2	2	3.68E-03	48.6003	Si X	4	2	2.19E-02
38.9660	S IX	5	7	6.36E-02	44.7249	Na IX	2	4	7.34E-03	48.6469	S VII	1	3	2.20E-01
39.0032	S IX	3	5	3.69E-02	44.7429	Al IX	4	6	5.24E-02	48.7389	Ar IX	1	3	2.38E-01
39.030	S XI	1	3	2.92E-01	44.8019	Al IX	4	4	5.81E-03	49.1190	S IX	5	7	2.24E-01
39.110	S XI	3	3	7.28E-02	44.831	Si X	4	4	3.37E-02	49.1316	S IX	5	3	2.67E-03
39.1297	S XI	3	5	1.21E-01	44.859	Si X	4	2	6.73E-03	49.1345	S IX	5	5	4.01E-02
39.220	S XI	5	3	7.26E-02	45.2790	S VIII	4	6	1.63E-01	49.3251	S IX	3	3	6.66E-02
39.2400	S XI	5	5	2.18E-01	45.2946	S VIII	4	4	4.34E-02	49.3280	S IX	3	5	2.00E-01
39.2400	S XI	1	3	8.80E-01	45.3700	S VIII	4	4	1.80E-02	49.3900	S IX	1	3	2.66E-01
39.3000	S XI	3	5	6.58E-01	45.5024	S VIII	2	4	1.73E-02	49.4549	B IV	1	3	2.56E-02
39.3204	S XI	3	3	2.19E-01	45.5785	S VIII	2	4	1.79E-01	49.9870	Si VIII	4	4	1.05E-01
39.3230	S XI	5	7	7.37E-01	46.0900	Na IX	2	2	6.19E-03	50.0190	Si VIII	4	6	1.57E-01
39.4112	S XI	5	5	1.31E-01	46.0900	Na IX	2	4	1.24E-02	50.2190	Mg VIII	4	6	2.16E-02
39.4317	S XI	5	3	8.75E-03	46.2120	S VII	1	3	8.35E-02	50.3499	Fe XVI	2	4	1.59E-01
39.4429	Si X	2	4	1.27E-01	46.3729	S IX	5	7	3.40E-01	50.4347	B IV	1	3	5.21E-02
39.5520	Si X	4	4	1.28E-02	46.3766	S IX	5	3	4.04E-03	50.5239	Si X	2	4	6.28E-01
39.5520	Si X	4	6	1.15E-01	46.4128	S IX	5	5	6.06E-02	50.5551	Fe XVI	2	2	7.93E-02
39.668	Mg X	2	2	1.20E-02	46.5490	S IX	3	3	1.01E-01	50.6909	Si X	4	6	5.62E-01
39.668	Mg X	2	4	2.41E-02	46.585	S IX	5	5	3.68E-02	50.7030	Si X	4	4	6.25E-02
39.717	Ar XI	5	3	4.38E-02	46.5854	S IX	3	5	3.02E-01	51.2032	S VIII	4	4	1.16E-02
39.947	Ar XI	3	3	4.35E-02	46.6067	S IX	1	3	4.02E-01	51.2267	S VIII	4	6	1.04E-01
40.008	Ar XI	1	3	4.34E-02	46.624	S IX	5	3	1.22E-02	51.3859	Mg VIII	2	4	1.60E-02
40.1710	S IX	5	7	1.06E-01	46.759	S IX	3	5	2.04E-02	51.4690	S VIII	2	4	1.16E-01
40.2678	C V	1	3	6.48E-01	46.799	S IX	3	3	1.22E-02	51.4732	Mg VIII	4	4	1.61E-03
40.4722	Si XI	1	3	2.04E-02	46.8429	S IX	3	1	1.62E-02	51.4732	Mg VIII	4	6	1.44E-02
40.6380	Mg IX	1	3	1.29E-02	46.857	S IX	1	3	4.87E-02	51.7891	Na VIII	1	3	3.16E-02
40.9110	Si XII	2	4	2.29E-01	46.891	Si X	2	2	4.75E-02	51.8070	S VII	1	3	6.08E-01
40.9510	Si XII	2	2	1.14E-01	47.045	Si X	4	2	4.73E-02	51.9791	Al X	1	3	5.65E-01
40.9960	B V	2	4	5.27E-02	47.0471	S IX	5	3	1.48E-01	52.6806	S VIII	4	4	5.52E-02
40.9971	B V	2	2	2.63E-02	47.0981	S VII	1	3	1.34E-01	52.6807	B IV	1	3	1.35E-01
41.3570	S X	4	6	1.06E-01	47.1847	S IX	5	3	1.09E-01	52.7028	S VIII	4	2	7.81E-02
41.4760	Ar IX	1	3	2.01E+00	47.2245	S IX	3	3	1.48E-01	52.7562	S VIII	4	6	4.96E-01
41.5431	Al IX	4	6	2.09E-02	47.2489	S IX	5	5	3.28E-01	52.7895	S VIII	4	4	3.90E-01
41.5728	Ar X	4	2	1.27E-02	47.2840	S IX	1	3	1.47E-01	52.8099	Si IX	3	5	1.18E-01
41.8030	Mg IX	1	3	3.32E-02	47.3632	S IX	3	3	1.09E-01	52.8380	Si IX	5	7	1.32E-01
41.8872	Ar X	2	2	1.26E-02	47.4230	S IX	1	3	4.37E-01	52.8589	S IX	5	5	2.91E-02
42.4850	S X	4	2	2.76E-01	47.4279	S IX	3	5	1.82E-01	52.9109	Fe XV	1	3	4.08E-01
42.4950	S X	4	4	5.52E-01	47.4329	S IX	5	7	3.77E-01	52.9180	Si IX	5	5	2.34E-02
42.5431	S X	4	6	8.27E-01	47.4356	S IX	5	5	6.73E-02	52.9553	S VIII	4	2	1.46E-01
42.9345	Ar X	4	4	6.77E-03	47.4890	Si X	2	4	2.36E-01	52.9620	S VIII	2	4	5.49E-01
42.9400	Ar X	4	6	6.09E-02	47.4985	S IX	5	3	4.48E-03	52.963	Al IX	2	2	8.57E-03
42.9898	S XI	3	5	2.65E-02	47.5190	S VIII	4	4	2.64E-02	52.9844	S VIII	2	2	3.10E-01
43.0986	S XI	1	3	6.34E-02	47.5450	Si X	4	6	2.13E-01	53.0721	S VIII	2	4	1.55E-01
43.1229	S XI	5	5	4.76E-02	47.6160	S IX	3	5	3.35E-01	53.0829	S IX	3	5	1.61E-02
43.1956	S XI	3	3	1.59E-02	47.6472	Si X	4	4	2.35E-02	53.101	Al IX	4	2	8.55E-03
43.2700	Ar X	2	4	6.72E-02	47.6544	S X	4	6	5.72E-02	53.2368	Al IX	2	4	1.28E-02
43.3300	S XI	5	3	1.58E-02	47.6793	S IX	3	3	1.12E-01	53.2396	S VIII	2	2	1.46E-01
43.5491	Al IX	4	6	4.47E-02	47.7399	S IX	1	3	4.46E-01	53.2669	Al IX	2	2	2.54E-02
43.6962	Ar X	4	2	1.82E-02	47.7479	S VIII	2	4	1.05E-02	53.3757	Al IX	4	4	3.18E-02
43.7623	Si XI	1	3	5.83E-01	47.7550	Al IX	2	4	1.38E-01	53.4060	Al IX	4	2	6.34E-03
43.8429	Mg IX	1	3	4.87E-02	47.7920	S X	4	4	3.80E-02	53.8057	Si IX	1	3	3.81E-02
43.9200	Ar X	4	4	9.07E-02	47.8041	Al X	1	3	1.72E-02	53.810	Ne VIII	2	2	1.14E-03
44.0437	Ar X	2	2	7.23E-02	47.8560	Al IX	4	6	1.24E-01	53.810	Ne VIII	2	4	2.28E-03
44.0500	Mg X	2	2	2.84E-02	47.8668	Al IX	4	4	1.38E-02	53.8120	Mg VIII	2	4	4.68E-02
44.0500	Mg X	2	4	5.68E-02	47.9051	S X	4	2	1.90E-02	53.8570	Na IX	2	4	5.58E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
53.8665	Na IX	2	2	2.79E-02	57.1318	Mg VIII	4	2	8.13E-04	60.7958	Ne VIII	2	4	2.30E-02
53.8795	Si IX	3	3	3.80E-02	57.3250	Si VII	5	7	6.16E-02	60.8059	Mg VIII	4	2	3.02E-03
53.9049	Mg VIII	4	6	4.21E-02	57.3710	Mg IX	1	3	1.36E-02	60.8369	Si VII	5	7	9.81E-02
53.9078	Mg VIII	4	4	4.68E-03	57.4340	Si VII	5	5	1.95E-02	60.8961	Al IX	2	4	6.19E-01
53.9920	Si IX	5	3	3.80E-02	57.5221	Be IV	2	4	1.07E-03	60.9890	Si VIII	4	2	2.55E-01
54.0891	S VIII	4	4	5.52E-02	57.5222	Be IV	2	2	5.35E-04	61.0191	Si VIII	4	4	5.10E-01
54.1203	S VIII	4	6	3.85E-01	57.5672	Si VII	3	5	1.08E-02	61.0206	Mg VIII	2	4	7.80E-04
54.1750	S IX	5	7	5.76E-02	57.6587	Be IV	2	4	1.48E-03	61.0691	Al IX	4	6	5.55E-01
54.1955	S IX	5	5	1.03E-02	57.6588	Be IV	2	2	7.38E-04	61.0698	Si VIII	4	6	7.64E-01
54.2014	S IX	5	3	6.85E-04	57.7471	Ne VIII	2	2	6.04E-03	61.0780	Al IX	4	4	6.17E-02
54.2170	Al VIII	3	5	1.38E-01	57.7471	Ne VIII	2	4	1.21E-02	61.1438	Mg VIII	4	4	7.79E-05
54.2561	Na VIII	1	3	8.62E-03	57.783	Mg VIII	4	6	5.03E-03	61.1438	Mg VIII	4	6	7.00E-04
54.2579	Al VIII	5	7	1.54E-01	57.8508	Be IV	2	2	1.06E-03	61.3061	Si VII	5	7	2.16E-02
54.2667	S VIII	4	4	4.27E-02	57.8508	Be IV	2	4	2.12E-03	61.5023	Si IX	3	5	2.76E-02
54.2968	Al VIII	5	5	2.75E-02	57.8761	Mg X	2	4	2.18E-01	61.5935	S VIII	4	4	6.93E-03
54.3018	Mg IX	1	3	3.42E-02	57.9200	Mg X	2	2	1.08E-01	61.5992	S VIII	4	6	6.24E-02
54.309	Ne VIII	2	2	1.59E-03	58.0582	Al IX	2	4	4.23E-02	61.5999	Si IX	1	3	6.62E-02
54.309	Ne VIII	2	4	3.20E-03	58.1115	Al IX	2	2	8.45E-02	61.6490	Si IX	5	5	4.96E-02
54.3432	S VIII	4	2	1.10E-02	58.1332	Be IV	2	4	3.21E-03	61.6966	Si IX	3	3	1.65E-02
54.3800	Na VIII	1	3	5.91E-02	58.1333	Be IV	2	2	1.60E-03	61.8442	Si IX	5	3	1.65E-02
54.3858	S VIII	2	4	2.19E-02	58.2235	Al IX	4	4	1.05E-01	61.9785	S VIII	2	4	6.88E-02
54.4311	S IX	3	5	5.12E-02	58.2771	Al IX	4	2	2.10E-02	62.08	Fe XIII	3	1	3.53E-02
54.4370	S IX	3	3	1.71E-02	58.3160	Mg VII	5	7	1.61E-02	62.3531	Fe XIII	1	3	3.49E-01
54.4621	Si VII	5	5	1.91E-02	58.3880	Si VII	5	3	4.13E-02	62.6247	Mg VII	3	5	8.22E-03
54.5161	S IX	1	3	6.82E-02	58.4450	Si VII	5	5	6.18E-02	62.641	Na VII	2	4	8.85E-03
54.5221	Si VII	5	7	6.90E-04	58.5257	Si VII	3	3	4.12E-02	62.6961	Mg VII	5	5	1.48E-02
54.5653	S VIII	2	4	4.25E-01	58.5738	Be IV	2	4	5.20E-03	62.6992	Fe XIII	3	5	2.60E-01
54.5819	Si VII	3	5	1.06E-02	58.5739	Be IV	2	2	2.60E-03	62.7169	Fe XIII	3	3	8.66E-02
54.6427	S VIII	2	2	4.37E-02	58.5784	Si VII	1	3	4.11E-02	62.725	Na VII	4	4	8.84E-04
54.6520	S VII	1	3	4.43E-02	58.5792	Si VII	5	5	1.07E-02	62.725	Na VII	4	6	7.96E-03
54.8531	Mg VIII	2	4	5.17E-02	58.5792	Si VII	5	7	6.03E-02	62.7510	Mg IX	1	3	5.43E-01
54.885	Si X	2	2	2.44E-02	58.5830	Si VII	3	5	3.43E-02	62.9628	Fe XIII	5	7	2.90E-01
54.8860	Mg VIII	4	6	4.64E-02	58.7178	Si VII	3	5	5.36E-02	63.0269	S VIII	4	2	1.87E-02
54.9527	Mg VIII	4	4	5.16E-03	58.751	Al VII	4	6	8.68E-03	63.0653	Fe XIII	5	5	5.16E-02
55.0100	Ne VIII	2	2	2.33E-03	58.8243	Mg VIII	4	6	1.10E-02	63.0832	Fe XIII	5	3	3.45E-03
55.0100	Ne VIII	2	4	4.68E-03	58.8362	S VIII	4	2	2.37E-02	63.1417	Na VII	2	4	1.98E-02
55.0388	Si IX	1	3	2.79E-01	58.8848	Si VIII	4	2	2.92E-02	63.2271	Na VII	4	4	1.97E-03
55.0938	Si IX	3	1	9.29E-02	58.8848	Si VIII	4	4	5.84E-02	63.2271	Na VII	4	6	1.77E-02
55.096	Si X	4	2	2.43E-02	58.8848	Si VIII	4	6	8.76E-02	63.3063	S VIII	4	4	9.36E-02
55.1160	Si IX	3	3	6.96E-02	58.9630	Fe XIV	2	4	2.85E-01	63.3573	Na VII	2	4	5.80E-03
55.1216	Mg VIII	2	4	1.08E-02	59.0378	Mg VIII	2	4	1.24E-01	63.3573	Na VII	2	2	1.16E-02
55.1540	Si IX	3	5	1.16E-01	59.1531	Mg VIII	4	4	1.24E-02	63.3960	Mg VII	5	7	4.11E-02
55.2221	Mg VIII	4	4	2.72E-02	59.1531	Mg VIII	4	6	1.12E-01	63.4300	S VIII	2	2	7.47E-02
55.2338	Si IX	5	3	6.94E-02	59.1874	S VIII	2	2	2.35E-02	63.4433	Na VII	4	2	2.90E-03
55.2719	Si IX	5	5	2.08E-01	59.2364	S VIII	4	2	1.30E-02	63.4433	Na VII	4	4	1.44E-02
55.3048	Si IX	1	3	8.40E-01	59.3195	Be IV	2	4	9.30E-03	63.6910	Na VII	2	4	1.41E-02
55.3558	Si IX	3	5	6.29E-01	59.3197	Be IV	2	2	4.65E-03	63.7131	S VIII	2	4	3.72E-02
55.3828	Si IX	3	3	2.09E-01	59.5792	Fe XIV	4	6	2.54E-01	63.7779	Na VII	4	4	1.41E-03
55.4012	Si IX	5	7	7.04E-01	59.5924	S VIII	2	2	1.29E-02	63.7779	Na VII	4	6	1.27E-02
55.4746	Si IX	5	5	1.26E-01	59.6258	Fe XIV	4	4	2.82E-02	63.9329	Al VIII	1	3	1.45E-01
55.5017	Si IX	5	3	8.37E-03	59.7589	Na VIII	1	3	1.36E-01	63.9697	Al VIII	3	5	1.09E-01
56.0431	Ne VIII	2	2	3.61E-03	59.884	Si VII	5	5	6.24E-03	64.0029	Al VIII	3	3	3.63E-02
56.0431	Ne VIII	2	4	7.21E-03	60.029	Si VII	3	5	3.46E-03	64.0041	Al VIII	5	7	1.22E-01
56.0805	S IX	5	3	4.55E-02	60.0323	Mg VII	1	3	1.36E-02	64.0250	Na VII	2	4	1.29E-02
56.1495	Al IX	2	2	4.40E-02	60.0722	Mg VII	3	1	4.53E-03	64.0644	Be IV	2	4	5.27E-02
56.3041	Al IX	4	2	4.39E-02	60.0722	Mg VII	3	5	5.66E-03	64.0656	Be IV	2	2	2.63E-02
56.3328	S IX	3	3	4.53E-02	60.0722	Mg VII	3	3	3.40E-03	64.0808	Al VIII	5	5	2.18E-02
56.4174	S IX	1	3	4.52E-02	60.1379	Mg VII	5	3	3.39E-03	64.1128	Na VII	4	4	1.29E-03
56.5278	Si VII	5	7	7.72E-02	60.1379	Mg VII	5	5	1.02E-02	64.1128	Na VII	4	6	1.16E-02
56.8990	Al IX	2	4	2.23E-01	60.1614	S VII	1	3	1.60E+00	64.1141	Al VIII	5	3	1.44E-03
56.9450	Al IX	4	6	2.01E-01	60.3145	B IV	1	3	6.11E-01	64.1330	Ca X	2	2	1.94E-03
56.9869	Mg VIII	2	4	1.63E-03	60.6840	Mg VIII	2	2	3.03E-03	64.1330	Ca X	2	4	3.89E-03
57.0242	Mg VIII	2	2	3.26E-03	60.7430	Be IV	2	4	1.93E-02	64.2430	Mg VIII	2	2	9.89E-03
57.0578	Al IX	4	4	2.22E-02	60.7434	Be IV	2	2	9.67E-03	64.3796	Mg VIII	4	2	9.86E-03
57.0943	Mg VIII	4	4	4.06E-03	60.7958	Ne VIII	2	2	1.15E-02	64.4928	Mg VIII	2	4	1.17E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
64.5165	Mg VIII	2	2	2.35E-02	69.3948	Na VII	4	4	2.31E-03	74.5740	Mg VI	4	2	1.54E-03
64.6305	Mg VIII	4	4	2.93E-02	69.4150	Mg VIII	2	4	2.06E-01	74.5740	Mg VI	4	4	3.08E-03
64.6543	Mg VIII	4	2	5.87E-03	69.4169	Na VII	4	2	4.61E-04	74.5740	Mg VI	4	6	4.62E-03
64.7020	Mg VIII	4	6	1.68E-02	69.4483	Si VI	2	4	8.07E-02	74.5941	Al VI	3	5	3.46E-02
64.809	Al VII	4	6	1.64E-02	69.4672	Mg VIII	4	6	1.86E-01	74.6581	Al VI	5	3	6.13E-04
65.3061	Al VIII	1	3	3.61E-02	69.5745	Mg VIII	4	4	2.05E-02	74.6581	Al VI	5	5	9.19E-03
65.3791	Al VIII	3	3	3.61E-02	69.5797	Si VII	3	3	1.28E-01	74.6581	Al VI	5	7	5.15E-02
65.3826	Na VII	2	4	2.53E-02	69.6015	Si VII	5	3	9.48E-02	74.8107	Al VI	3	3	1.53E-02
65.4741	Na VII	4	4	2.52E-03	69.6321	Si VIII	4	6	5.98E-02	74.8107	Al VI	3	5	4.59E-02
65.4741	Na VII	4	6	2.26E-02	69.6541	Si VII	1	3	1.28E-01	74.8380	Fe XIII	1	3	1.01E-01
65.4952	Al VIII	5	3	3.60E-02	69.6641	Si VII	5	5	2.84E-01	74.8436	Fe XIII	5	5	7.57E-02
65.8241	Ca X	2	2	2.92E-03	69.6854	Fe XIV	2	2	6.55E-02	74.8581	Mg VIII	2	4	6.07E-01
65.8241	Ca X	2	4	5.83E-03	69.7900	Si VIII	4	4	3.98E-02	74.8609	Na VII	2	4	1.22E-01
65.850	Ne VII	1	3	2.93E-02	69.7973	Si VII	3	3	9.46E-02	74.8721	Al VI	1	3	6.11E-02
65.9048	Fe XII	4	4	1.75E-01	69.8027	Na VII	2	4	1.07E-02	74.9799	Na VII	4	6	1.10E-01
66.0620	Na VIII	1	3	3.50E-02	69.8256	Na VII	2	2	2.12E-02	74.9810	Na VII	4	4	1.22E-02
66.2972	Fe XII	4	6	2.61E-01	69.8602	Si VII	3	5	1.58E-01	75.0341	Mg VIII	4	6	5.46E-01
66.6214	Al IX	2	2	2.51E-02	69.8722	Si VII	1	3	3.78E-01	75.0436	Mg VIII	4	4	6.06E-02
66.7722	Si VI	4	6	6.80E-03	69.9051	Si VIII	4	2	1.99E-02	75.1236	Na VII	2	4	2.54E-03
66.8391	Al IX	4	2	2.50E-02	69.9070	Na VII	4	4	2.66E-02	75.194	Si VI	4	4	1.97E-02
67.0443	Al VIII	1	3	2.71E-01	69.9300	Na VII	4	2	5.30E-03	75.1975	Na VII	4	6	2.28E-03
67.0961	Al VIII	3	1	9.02E-02	70.0236	Si VII	5	5	5.48E-02	75.2445	Na VII	4	4	2.53E-04
67.1213	Al VIII	3	3	6.76E-02	70.0270	Si VII	5	7	3.07E-01	75.2757	Al VII	4	2	2.40E-01
67.1655	Al VIII	3	5	1.13E-01	70.1201	Na VIII	1	3	9.82E-03	75.3074	Al VII	4	4	4.80E-01
67.2436	Al VIII	5	3	6.75E-02	70.2218	Si VII	3	5	2.73E-01	75.3626	Fe XIII	3	3	2.50E-02
67.2880	Al VIII	5	5	2.03E-01	70.6131	Fe XIV	4	2	6.46E-02	75.3636	Al VII	4	6	7.19E-01
67.3596	Al VIII	1	3	8.12E-01	70.6150	Na IX	2	4	2.10E-01	75.483	Si VI	2	4	7.87E-03
67.3818	Ne VIII	2	2	2.71E-02	70.6399	Na VII	2	4	7.66E-03	75.5881	Fe X	4	4	1.32E-02
67.3818	Ne VIII	2	4	5.41E-02	70.6529	Na IX	2	2	1.05E-01	75.6229	Al VIII	3	5	2.85E-02
67.4068	Al VIII	3	5	6.09E-01	70.7468	Na VII	4	4	7.65E-04	75.6848	Fe X	4	6	1.19E-01
67.4372	Al VIII	3	3	2.03E-01	70.7468	Na VII	4	6	6.88E-03	75.7323	Al VIII	1	3	6.82E-02
67.4641	Al VIII	5	7	6.81E-01	70.9522	Mg VIII	2	4	4.03E-02	75.7650	Ne VII	1	3	1.26E-01
67.5302	Al VIII	5	5	1.22E-01	70.9800	F VII	2	2	2.27E-03	75.7782	Al VIII	5	5	5.11E-02
67.5607	Al VIII	5	3	8.10E-03	70.9800	F VII	2	4	4.54E-03	75.8305	Al VIII	3	3	1.70E-02
67.7870	Ne VII	1	3	5.06E-03	71.0041	Mg VIII	2	2	8.04E-02	75.834	Mg VI	4	6	1.31E-02
67.9799	Mg VII	3	5	2.47E-02	71.1188	Mg VIII	4	4	1.00E-01	75.890	Mg VI	4	4	8.74E-03
68.0640	Mg VII	5	5	4.43E-02	71.1709	Mg VIII	4	2	2.00E-02	75.8922	Fe XIII	5	3	2.49E-02
68.0998	Mg VII	3	5	1.31E-01	71.1810	Si VI	4	6	1.99E-01	75.8938	Al VIII	3	1	2.27E-02
68.1438	Mg VII	5	7	1.47E-01	71.2733	Si VI	4	4	5.48E-02	75.9077	Fe X	4	2	2.21E-02
68.1482	Si VII	5	7	2.55E-01	71.3018	Si VI	4	2	1.09E-02	75.9259	Be IV	2	4	2.77E-01
68.1842	Mg VII	5	5	2.62E-02	71.5328	Si VI	2	4	2.19E-02	75.9313	Be IV	2	2	1.39E-01
68.1900	Si VII	5	5	4.55E-02	71.5615	Si VI	2	2	4.37E-02	75.9867	Al VIII	5	3	1.70E-02
68.3779	Si VII	3	5	2.27E-01	71.9192	Na VII	2	4	1.47E-02	76.0057	Fe X	4	4	1.10E-01
68.4060	Si VII	5	5	3.80E-02	72.0285	S VII	1	3	2.43E-01	76.028	Ca IX	1	3	2.40E-02
68.4219	Na VII	2	4	4.66E-02	72.0300	Na VII	4	4	1.47E-03	76.4018	Al VI	5	5	9.92E-03
68.4505	Mg VIII	2	2	3.99E-02	72.0300	Na VII	4	6	1.32E-02	76.4949	Fe X	2	4	1.30E-01
68.4528	Si VII	5	3	1.27E-02	72.2763	Al VII	4	4	5.25E-02	76.5616	Al VI	3	5	5.50E-03
68.4969	Ca X	2	2	4.70E-03	72.2784	Al VII	4	6	7.86E-02	76.8222	Fe X	2	2	8.71E-02
68.4969	Ca X	2	4	9.39E-03	72.3140	F VII	2	2	3.50E-03	76.9227	Fe X	2	4	4.35E-02
68.5189	Na VII	4	6	4.20E-02	72.3140	F VII	2	4	7.01E-03	76.9687	Mg VII	1	3	8.44E-03
68.5222	Na VII	4	4	4.66E-03	72.6348	Fe XI	5	7	1.12E-01	77.0343	Mg VII	3	3	2.11E-03
68.5951	Si VII	3	5	2.11E-02	72.8911	Fe IX	1	3	6.35E-02	77.0343	Mg VII	3	5	6.32E-03
68.6056	Mg VIII	4	2	3.98E-02	72.8959	Si VI	4	6	1.05E-02	77.1423	Mg VII	5	3	8.42E-05
68.6422	Si VII	3	3	1.27E-02	73.1229	Si VII	5	7	2.31E-01	77.1423	Mg VII	5	5	1.26E-03
68.6691	Si VII	3	1	1.69E-02	73.1336	Si VII	5	3	2.74E-03	77.1423	Mg VII	5	7	7.07E-03
68.7146	Si VII	1	3	5.05E-02	73.1336	Si VII	5	5	4.12E-02	77.2046	Fe X	4	4	1.96E-02
68.8658	Na VII	2	4	4.59E-02	73.1588	Ca X	2	4	1.68E-02	77.2254	Na VII	2	2	1.17E-03
68.9080	Na VII	4	6	4.14E-02	73.1872	Ca X	2	2	8.38E-03	77.2660	Na VIII	1	3	5.17E-01
68.9674	Na VII	4	4	4.59E-03	73.3498	Si VII	3	3	6.84E-02	77.3532	Na VII	4	2	1.17E-03
69.2037	Si VI	4	4	8.10E-03	73.3498	Si VII	3	5	2.05E-01	77.4120	Si VI	4	4	8.11E-03
69.2358	Si VI	4	6	7.29E-02	73.4325	Si VII	1	3	2.73E-01	77.4287	Si VI	4	6	7.30E-02
69.2919	Na VII	2	4	9.24E-04	74.3286	Fe XIII	3	5	4.23E-02	77.7182	Si VI	2	4	8.08E-02
69.2972	Ne VII	1	3	1.17E-02	74.4424	Al VI	5	5	6.24E-02	77.8101	Fe X	4	4	1.86E-02
69.3140	Na VII	2	2	1.84E-03	74.4654	F VII	2	2	5.88E-03	77.8652	Fe X	4	6	1.67E-01
69.3852	Si VII	5	3	1.28E-01	74.4654	F VII	2	4	1.17E-02	77.9448	Al VI	5	3	3.68E-04

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
77.9448	Al VI	5	5	5.52E-03	81.8920	Si VII	3	5	5.27E-02	86.6520	Na VII	4	6	1.70E-01
77.9448	Al VI	5	7	3.09E-02	81.9951	Si VII	1	3	7.02E-02	86.7295	F VII	2	4	5.21E-02
78.1111	Al VI	3	3	9.17E-03	82.0082	Ne VII	1	3	3.64E-02	86.7383	F VII	2	2	2.60E-02
78.1111	Al VI	3	5	2.76E-02	82.0816	Al VI	5	3	1.20E-02	86.7573	Na VII	4	4	1.88E-02
78.1508	Fe X	2	4	7.72E-03	82.2661	Al VI	3	3	1.20E-02	86.7717	Fe XI	5	7	7.74E-02
78.1781	Al VI	1	3	3.67E-02	82.3404	Al VI	1	3	1.20E-02	86.8847	Al VII	4	6	6.14E-02
78.339	Mg VII	1	3	7.46E-02	82.3770	Be III	1	3	1.37E-02	87.0125	Al V	4	4	3.21E-03
78.3566	F VII	2	4	2.22E-02	82.4300	Fe IX	1	3	5.48E-01	87.0201	Al V	4	6	2.88E-02
78.3606	F VII	2	2	1.11E-02	82.5975	Mg VIII	2	2	2.61E-02	87.0246	Fe XI	5	5	1.37E-02
78.407	Mg VII	3	1	2.48E-02	82.7979	Ca X	2	4	3.56E-02	87.0587	Al VII	4	4	4.09E-02
78.407	Mg VII	3	5	3.10E-02	82.8234	Mg VIII	4	2	2.60E-02	87.0633	Fe XI	5	3	9.18E-04
78.407	Mg VII	3	3	1.87E-02	82.8603	Ca X	2	2	1.78E-02	87.1688	Al VII	4	2	2.04E-02
78.4591	Al VI	5	3	9.06E-04	83.0055	Si VI	4	4	6.91E-02	87.2235	Ne VII	1	3	5.92E-03
78.4591	Al VI	5	5	1.36E-02	83.0790	F VI	1	3	1.12E-02	87.2739	Al V	2	4	3.20E-02
78.4591	Al VI	5	7	7.61E-02	83.1283	Si VI	4	6	3.81E-01	87.3317	Al VI	5	3	1.14E-01
78.519	Mg VII	5	3	1.87E-02	83.2020	Be III	1	3	2.43E-02	87.5405	Al VI	3	3	1.14E-01
78.519	Mg VII	5	5	5.59E-02	83.2570	Si VI	4	4	4.22E-02	87.5871	Al VI	5	3	8.46E-02
78.6276	Al VI	3	3	2.26E-02	83.2841	Si VI	4	2	1.38E-02	87.6247	Al VI	1	3	1.14E-01
78.6276	Al VI	3	5	6.77E-02	83.3576	Si VI	2	4	2.76E-02	87.6516	Al VI	5	5	2.53E-01
78.6955	Al VI	1	3	9.03E-02	83.5108	Mg VII	1	3	2.60E-01	87.7757	Al VI	3	1	1.13E-01
78.7714	Fe X	2	4	1.84E-01	83.5601	Mg VII	3	1	8.65E-02	87.7972	Al VI	3	3	8.42E-02
79.1325	Mg VII	3	5	9.96E-02	83.5603	Mg VI	4	6	1.12E-02	87.8620	Al VI	3	5	1.41E-01
79.1680	Mg VII	5	7	1.11E-01	83.5881	Mg VII	3	3	6.48E-02	87.8819	Al VI	1	3	3.37E-01
79.2368	Si VII	5	5	2.99E-02	83.6113	Si VI	2	4	4.20E-01	87.9088	F VI	1	3	1.19E-02
79.2465	Mg VII	5	5	1.99E-02	83.6370	Mg VII	3	5	1.08E-01	87.9947	Fe XI	3	5	6.82E-02
79.2638	Si VII	5	3	9.97E-03	83.6386	Si VI	2	2	5.49E-02	88.0342	Fe XI	3	3	2.27E-02
79.4357	Na VII	2	2	1.27E-02	83.7152	Mg VII	5	3	6.47E-02	88.053	Na VI	3	5	1.88E-02
79.4881	Fe XII	4	6	9.41E-02	83.7643	Mg VII	5	5	1.94E-02	88.079	Ne VIII	2	4	2.01E-01
79.4906	Si VII	3	5	1.66E-02	83.9102	Mg VII	1	3	7.78E-01	88.117	Ne VIII	2	2	1.00E-01
79.5178	Si VII	3	3	9.93E-03	83.9586	Mg VII	3	5	5.82E-01	88.143	Na VI	5	5	3.39E-02
79.5229	Si VII	3	1	1.32E-02	83.9882	Mg VII	3	3	1.94E-01	88.156	Al VI	5	5	4.67E-02
79.5709	Na VII	4	2	1.27E-02	84.0247	Mg VII	5	7	6.52E-01	88.1618	Fe XI	1	3	9.07E-02
79.6150	Si VII	1	3	3.97E-02	84.0869	Mg VII	5	5	1.16E-01	88.163	Al VI	5	3	3.11E-03
79.7588	Na VII	2	4	1.06E-02	84.1166	Mg VII	5	3	7.76E-03	88.163	Al VI	5	7	2.61E-01
79.7862	Na VII	2	2	2.12E-02	84.4260	F VI	1	3	1.72E-02	88.223	Na VI	1	3	1.98E-01
79.8167	Mg VI	4	2	3.70E-02	84.7580	Be III	1	3	4.93E-02	88.248	Na VI	3	5	1.48E-01
79.8301	Mg VI	4	4	7.38E-02	85.2900	Si VII	5	3	4.76E-02	88.270	Na VI	5	7	1.66E-01
79.8569	Mg VI	4	6	1.11E-01	85.2995	Na VII	2	2	3.51E-02	88.277	Na VI	3	3	4.94E-02
79.8933	Na VII	2	4	1.87E-02	85.4554	Na VII	4	2	3.50E-02	88.3088	Be III	1	3	1.27E-01
79.8951	Na VII	4	4	2.65E-02	85.5176	Al VI	5	7	2.09E-01	88.338	Na VI	5	5	2.97E-02
79.9226	Na VII	4	2	5.31E-03	85.5249	Al VI	5	3	2.49E-03	88.367	Al V	4	4	3.27E-02
80.0083	Na VII	4	6	1.68E-02	85.5659	Al VI	5	5	3.73E-02	88.368	Na VI	5	3	1.98E-03
80.0218	Fe XII	4	4	6.23E-02	85.5842	Si VII	3	3	4.75E-02	88.369	Al VI	3	5	2.33E-01
80.0300	Na VII	4	4	1.87E-03	85.6120	Al V	4	4	2.18E-02	88.376	Al VI	3	3	7.76E-02
80.3949	Si VI	4	4	3.43E-02	85.6619	Al V	4	2	2.23E-02	88.425	Al V	4	6	9.06E-02
80.4492	Si VI	4	6	3.08E-01	85.6968	Si VII	1	3	4.74E-02	88.462	Al VI	1	3	3.10E-01
80.4900	Si VI	4	2	5.51E-02	85.7252	Al VI	3	3	6.21E-02	88.547	Al V	4	4	1.00E-02
80.5153	Fe XII	4	2	3.10E-02	85.7664	Al VI	3	5	1.86E-01	88.636	Al V	2	4	1.31E-02
80.5769	Si VI	4	4	2.75E-01	85.8038	Al V	4	6	9.11E-04	88.697	Na VII	2	4	3.78E-02
80.6979	Si VI	4	2	1.20E-01	85.8059	Al VI	1	3	2.48E-01	88.746	Na VII	2	2	7.54E-02
80.7252	Si VI	2	4	3.41E-01	85.8170	Al VI	5	5	3.83E-02	88.817	Al V	2	4	9.99E-02
80.8211	Si VI	2	2	2.20E-01	85.8651	Al V	2	4	8.71E-03	88.866	Na VII	4	4	9.41E-02
80.9088	Si VI	2	4	1.10E-01	85.8657	Al VI	5	3	1.28E-02	88.915	Na VII	4	2	1.88E-02
80.9173	Ca IX	1	3	3.84E-02	85.9152	Al V	2	2	2.23E-02	89.100	Ne VI	4	6	4.14E-02
80.9513	Mg VII	1	3	3.38E-02	85.9217	Al V	4	4	1.01E-04	89.188	Fe XI	5	3	6.78E-02
81.0239	Mg VII	3	3	3.38E-02	86.0187	Al VI	3	5	2.13E-02	89.9009	F VI	1	3	9.69E-03
81.0307	Si VI	2	2	1.20E-01	86.0676	Al VI	3	3	1.28E-02	89.950	Ne VI	2	4	5.59E-02
81.1434	Mg VII	5	3	3.37E-02	86.0896	Ne VI	2	4	2.61E-02	90.056	Ne VI	4	4	5.59E-03
81.5427	Na VI	5	7	5.45E-02	86.0942	Al VI	3	1	1.70E-02	90.056	Ne VI	4	6	5.04E-02
81.6227	Si VII	5	3	7.05E-04	86.1489	Al VI	1	3	5.09E-02	90.207	Fe XI	3	3	6.71E-02
81.6227	Si VII	5	5	1.06E-02	86.1766	Al V	2	4	1.01E-03	90.341	Fe XI	1	3	6.70E-02
81.6227	Si VII	5	7	5.92E-02	86.1868	Ne VI	4	4	2.60E-03	90.631	Al V	4	4	4.72E-02
81.6797	F VI	1	3	5.62E-03	86.1868	Ne VI	4	6	2.34E-02	90.646	Al V	4	6	4.66E-02
81.8910	Be III	1	3	8.57E-03	86.5966	Na VII	2	4	1.89E-01	90.700	Al V	4	2	3.38E-02
81.8920	Si VII	3	3	1.76E-02	86.6230	F VI	1	3	2.43E-02	90.794	Al V	4	2	9.43E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
90.897	Mg VI	4	2	2.80E-02	95.798	Mg V	5	7	6.33E-02	99.6167	Al V	2	4	6.21E-02
90.897	Mg VI	4	4	5.61E-02	95.8318	Al V	4	4	1.12E-03	99.680	Na VI	5	3	1.59E-02
90.897	Mg VI	4	6	8.42E-02	95.8323	Al V	4	6	1.01E-02	99.688	O VI	2	2	5.64E-03
90.914	Al V	2	4	1.88E-02	95.896	Mg V	5	5	1.83E-02	99.688	O VI	2	4	1.13E-02
90.9588	F VI	1	3	4.58E-02	95.917	Mg V	5	3	6.09E-03	99.7658	Al V	2	4	7.65E-03
90.984	Al V	2	2	3.37E-02	95.962	Mg V	3	3	1.88E-02	99.9660	Si VI	2	4	3.86E-02
91.078	Al V	2	2	3.76E-02	95.962	Mg V	3	5	5.64E-02	100.2552	Be III	1	3	5.55E-01
91.110	Ca IX	1	3	6.44E-02	96.0179	Si VI	4	4	7.07E-03	100.471	Na VI	3	5	8.96E-02
91.274	Fe XXI	1	3	5.62E-02	96.0231	Si VI	4	6	6.37E-02	100.515	Na VI	5	7	1.00E-01
91.3702	Si VI	4	2	1.33E-02	96.030	Mg V	1	3	7.51E-02	100.588	Na VI	5	5	1.79E-02
91.738	Na VI	3	5	5.86E-03	96.060	Mg V	3	5	1.01E-02	100.6164	Al VI	5	5	3.05E-02
91.7467	Al V	4	2	5.96E-03	96.081	Mg V	3	3	6.07E-03	100.6381	Al VI	5	3	1.02E-02
91.7971	Si VI	2	2	1.32E-02	96.121	Fe X	4	4	1.26E-01	100.777	Fe XXII	2	4	3.58E-02
91.836	Na VI	5	5	1.06E-02	96.134	Na VI	1	3	6.15E-03	100.8937	Al VI	3	5	1.69E-02
92.0374	Al V	2	2	5.94E-03	96.1489	Al V	2	4	1.12E-02	100.9156	Al VI	3	3	1.01E-02
92.432	Mg V	5	3	9.66E-03	96.149	Mg V	1	3	2.43E-02	100.9247	Al VI	3	1	1.35E-02
92.432	Mg V	5	5	2.90E-02	96.198	Na VI	3	3	1.53E-03	100.95	Mg V	5	3	1.35E-03
92.584	Mg V	3	5	1.61E-02	96.198	Na VI	3	5	4.61E-03	100.95	Mg V	5	5	4.06E-03
92.584	Mg V	3	3	9.64E-03	96.306	Na VI	5	3	6.14E-05	101.0274	Al VI	1	3	4.05E-02
92.6260	Al VI	5	7	2.29E-01	96.306	Na VI	5	5	9.21E-04	101.13	Mg V	3	1	1.80E-03
92.6393	Al VI	5	5	4.08E-02	96.306	Na VI	5	7	5.16E-03	101.13	Mg V	3	5	2.24E-03
92.6409	Al VI	5	3	2.72E-03	96.4399	Si V	1	3	1.08E+00	101.13	Mg V	3	3	1.35E-03
92.648	Mg V	1	3	3.86E-02	96.4895	Si VI	2	4	7.04E-02	101.21	Mg V	1	3	5.39E-03
92.8743	Al VI	3	5	2.03E-01	96.786	Fe X	2	2	9.93E-02	101.220	Ne VI	2	4	9.29E-03
92.8760	Al VI	3	3	6.79E-02	96.840	O VI	2	2	3.37E-03	101.354	Ne VI	4	4	2.32E-02
92.9707	Al VI	1	3	2.71E-01	96.840	O VI	2	4	6.74E-03	101.420	Ne VI	2	4	1.97E-02
93.0300	O VI	2	2	1.07E-03	97.392	Mg V	5	3	5.53E-04	101.540	Ne VI	4	6	1.77E-02
93.0300	O VI	2	4	2.14E-03	97.392	Mg V	5	5	8.29E-03	101.550	Fe XIX	5	3	2.37E-02
93.0330	Fe XV	1	3	1.28E-03	97.392	Mg V	5	7	4.64E-02	101.555	Ne VI	4	4	1.97E-03
93.4690	Fe VIII	4	6	7.30E-02	97.495	Ne VII	1	3	4.86E-01	102.0670	Ca VIII	2	4	4.88E-03
93.6160	Fe VIII	6	8	6.95E-02	97.561	Mg V	3	3	1.38E-02	102.224	Fe XXI	5	3	5.02E-02
93.6297	Fe VIII	6	6	3.47E-03	97.561	Mg V	3	5	4.14E-02	102.226	Fe XXII	2	2	2.28E-02
93.653	Al V	4	4	4.91E-02	97.593	Fe X	2	4	4.94E-02	102.2719	Li III	2	4	1.07E-03
93.755	Al V	4	6	1.71E-01	97.632	Mg V	1	3	5.51E-02	102.2720	Li III	2	2	5.35E-04
93.856	Al V	4	4	1.90E-02	97.871	Fe XXI	3	3	5.25E-02	102.4820	Ca VIII	4	6	4.38E-03
93.882	Al V	4	2	9.79E-03	98.131	Ne VI	2	4	1.22E-01	102.5148	Li III	2	4	1.48E-03
93.9150	O VI	2	2	1.49E-03	98.232	Mg V	5	3	9.98E-03	102.5149	Li III	2	2	7.38E-04
93.9150	O VI	2	4	2.99E-03	98.257	Ne VI	4	4	1.22E-02	102.5178	Ca VIII	4	4	4.86E-04
93.9230	Fe XVIII	4	2	5.21E-02	98.257	Ne VI	4	6	1.10E-01	102.8563	Li III	2	4	2.12E-03
93.956	Al V	2	4	1.96E-02	98.269	Mg V	5	5	2.99E-02	102.8564	Li III	2	2	1.06E-03
93.968	Fe X	4	4	8.77E-03	98.3710	Fe VIII	4	6	1.06E-01	103.004	Na VI	1	3	3.08E-02
94.012	Fe X	4	6	7.90E-02	98.404	Mg V	3	3	9.96E-03	103.078	Na VI	3	3	3.08E-02
94.160	Al V	2	4	1.90E-01	98.441	Mg V	3	5	1.66E-02	103.201	Na VI	5	3	3.07E-02
94.186	Al V	2	2	3.90E-02	98.476	Mg V	1	3	3.98E-02	103.3585	Li III	2	4	3.21E-03
94.288	Na VII	2	4	5.92E-01	98.5480	Fe VIII	6	8	1.01E-01	103.3586	Li III	2	2	1.60E-03
94.468	Na VII	4	6	5.32E-01	98.5490	Fe VIII	6	6	5.02E-03	103.8078	Al V	4	4	2.37E-02
94.479	Na VII	4	4	5.91E-02	98.6260	Mg V	5	3	3.90E-04	103.8820	Al V	4	6	2.13E-01
94.676	Ne VI	2	4	1.03E-04	98.6293	Mg V	5	5	5.86E-03	103.9020	Mg V	5	7	1.31E-01
94.794	Ne VI	4	4	1.03E-05	98.6350	Mg V	5	7	3.28E-02	103.9061	Mg V	5	3	1.56E-03
94.794	Ne VI	4	6	9.25E-05	98.7998	Mg V	3	3	9.74E-03	103.9061	Mg V	5	5	2.33E-02
95.0820	O VI	2	2	2.18E-03	98.8031	Mg V	3	5	2.93E-02	103.9368	Fe XVIII	2	2	4.71E-02
95.0820	O VI	2	4	4.37E-03	98.8720	Mg V	1	3	3.89E-02	103.9378	Mg V	5	3	1.56E-03
95.258	Mg VII	3	5	2.95E-02	99.0964	Si VI	4	2	1.95E-02	103.9390	Mg V	5	5	2.33E-02
95.339	Fe X	4	2	2.53E-02	99.1992	Al V	4	2	3.84E-03	103.9420	Mg V	5	7	1.31E-01
95.374	Fe X	2	4	8.65E-02	99.2201	F VI	1	3	1.11E-01	103.9892	Al V	4	2	4.15E-02
95.383	Mg VII	1	3	7.04E-02	99.2763	Al V	4	4	6.23E-03	104.05	Al VI	5	3	7.17E-04
95.385	Mg VI	4	2	2.10E-01	99.2905	Al V	4	6	5.61E-02	104.05	Al VI	5	5	1.08E-02
95.421	Mg VI	4	4	4.21E-01	99.4243	Al V	4	4	1.92E-02	104.05	Al VI	5	7	6.02E-02
95.423	Mg VII	5	5	5.28E-02	99.4599	Si VI	4	4	9.72E-02	104.0726	Al V	4	4	2.07E-01
95.483	Mg VI	4	6	6.29E-01	99.496	Na VI	1	3	6.40E-02	104.0990	Mg V	3	3	3.89E-02
95.484	Mg VII	3	3	1.76E-02	99.501	Na VI	3	5	2.67E-02	104.0990	Mg V	3	5	1.17E-01
95.556	Mg VII	3	1	2.35E-02	99.5390	Al V	2	2	1.53E-02	104.1217	Al V	4	2	1.02E-01
95.650	Mg VII	5	3	1.76E-02	99.565	Na VI	3	3	1.60E-02	104.1308	Mg V	3	3	3.89E-02
95.798	Mg V	5	3	7.53E-04	99.5988	Si VI	2	2	7.76E-02	104.1320	Mg V	3	5	1.17E-01
95.798	Mg V	5	5	1.13E-02	99.616	Na VI	5	5	4.79E-02	104.1419	Li III	2	4	5.20E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
104.1420	Li III	2	2	2.60E-03	109.800	Mg V	5	3	1.08E-02	113.4578	Ca VIII	4	4	4.32E-03
104.1791	Mg V	1	3	1.56E-01	109.8442	Al VI	3	3	4.89E-02	113.463	Fe VIII	4	4	1.15E-03
104.1800	Al V	2	4	2.37E-01	109.952	Fe XIX	1	3	8.76E-02	113.699	Mg V	5	3	9.70E-02
104.2109	Mg V	1	3	1.56E-01	109.9768	Al VI	1	3	4.89E-02	113.700	Fe VIII	6	4	8.47E-05
104.34	Al VI	3	3	1.79E-02	110.015	Mg V	3	3	1.08E-02	113.763	Fe VIII	4	6	5.43E-02
104.34	Al VI	3	5	5.36E-02	110.104	Mg V	1	3	1.08E-02	113.9046	Li III	2	4	5.27E-02
104.3628	Al V	2	2	1.66E-01	110.224	Ne V	1	3	2.43E-02	113.9057	Li III	2	2	2.63E-02
104.4467	Al V	2	4	8.26E-02	110.275	Ne V	3	1	8.09E-03	113.930	Mg V	3	3	9.68E-02
104.46	Al VI	1	3	7.14E-02	110.275	Ne V	3	5	1.01E-02	113.988	Mg V	5	3	7.17E-02
104.4962	Al V	2	2	1.02E-01	110.275	Ne V	3	3	6.07E-03	114.001	Fe VIII	6	6	2.58E-03
104.8130	O VI	2	2	1.06E-02	110.360	Ne V	5	3	6.07E-03	114.026	Mg V	1	3	9.67E-02
104.8130	O VI	2	4	2.13E-02	110.360	Ne V	5	5	1.82E-02	114.052	Mg V	5	5	2.15E-01
104.8380	Fe VII	7	9	2.49E-02	110.421	Ne V	5	7	5.96E-02	114.07	Ne VI	2	4	3.46E-02
104.8873	F VI	1	3	4.00E-02	110.7707	Mg V	5	3	1.91E-03	114.13	Ne VI	2	2	6.92E-02
104.9721	Fe VII	9	11	2.53E-02	110.8022	Mg V	5	5	2.87E-02	114.197	Mg V	3	1	9.53E-02
104.9789	Fe VII	9	9	1.29E-03	110.8461	Mg V	5	7	1.61E-01	114.220	Mg V	3	3	7.16E-02
105.114	Na VII	2	2	2.71E-02	110.963	Ca X	2	4	1.07E-01	114.24	Ne VI	4	4	8.65E-02
105.351	Na VII	4	2	2.70E-02	110.9899	Mg V	3	3	4.77E-02	114.284	Mg V	3	5	1.19E-01
105.4677	Li III	2	4	9.30E-03	111.0216	Mg V	3	5	1.43E-01	114.30	Ne VI	4	2	1.72E-02
105.4679	Li III	2	2	4.65E-03	111.0810	Mg V	1	3	1.91E-01	114.317	Mg V	1	3	2.86E-01
106.278	Na V	4	4	1.09E-01	111.099	Ne VI	2	4	1.68E-01	114.358	O V	1	3	1.02E-02
106.2850	Fe VII	7	9	3.42E-02	111.162	Ne VI	4	6	1.52E-01	114.41	Fe XXII	4	4	7.90E-02
106.302	Na V	4	6	1.64E-01	111.1891	Mg V	5	5	3.80E-02	114.429	F V	2	4	5.03E-03
106.317	Fe XIX	3	1	3.02E-02	111.199	Ca X	2	2	5.33E-02	114.527	F V	4	4	5.03E-04
106.4180	Fe VII	9	11	3.46E-02	111.2394	Mg V	5	3	1.27E-02	114.527	F V	4	6	4.53E-03
106.4298	Fe VII	9	9	1.77E-03	111.261	Ne VI	4	4	1.68E-02	114.759	Mg V	5	3	2.43E-03
107.014	Na VI	1	3	2.47E-01	111.4099	Mg V	3	5	2.11E-02	114.764	Mg V	5	5	3.65E-02
107.062	Na VI	3	1	8.23E-02	111.4605	Mg V	3	3	1.27E-02	114.782	Mg V	5	7	2.04E-01
107.094	Na VI	3	3	6.18E-02	111.4860	Mg V	3	1	1.69E-02	114.994	Mg V	3	3	6.07E-02
107.156	Na VI	3	5	1.03E-01	111.552	Mg VI	4	6	6.25E-02	114.999	Mg V	3	5	1.83E-01
107.227	Na VI	5	3	6.17E-02	111.5523	Mg V	1	3	5.05E-02	115.092	Mg V	1	3	2.42E-01
107.289	Na VI	5	5	1.85E-01	111.6040	Fe VII	7	9	7.59E-02	115.15	Fe XXI	3	5	2.07E-02
107.5530	Na VI	1	3	7.35E-01	111.6390	Fe VII	5	7	8.09E-02	115.8215	O VI	2	4	4.94E-02
107.61	Na VI	3	5	5.52E-01	111.6906	Fe VII	7	9	2.46E-03	115.8301	O VI	2	2	2.47E-02
107.6338	Na VI	3	3	1.84E-01	111.695	Fe XIX	3	3	2.15E-02	116.161	O V	1	3	1.39E-02
107.683	Na VI	5	7	6.18E-01	111.7388	Fe VII	5	7	3.41E-03	116.196	Fe VIII	4	6	1.12E-01
107.7113	Al V	4	4	7.35E-02	111.7415	Fe VII	9	11	7.69E-02	116.29	Fe XXII	4	2	2.01E-02
107.74	Na VI	5	5	1.10E-01	111.746	Mg VI	4	4	4.16E-02	116.444	Fe VIII	6	6	5.33E-03
107.7685	Na VI	5	3	7.35E-03	111.7636	Fe VII	9	9	3.93E-03	116.808	Fe VII	5	7	1.62E-06
107.8680	Fe VIII	4	6	1.98E-01	111.7671	Fe VII	5	5	2.73E-02	116.912	Fe VII	5	3	3.08E-04
107.9461	Al V	4	6	3.53E-01	111.7702	Fe VII	7	7	5.05E-03	116.951	Fe VII	7	7	4.06E-05
107.9988	Li III	2	4	1.93E-02	111.8505	Fe VII	9	9	2.87E-02	116.970	Fe VII	7	9	4.22E-04
107.9992	Li III	2	2	9.67E-03	111.864	Mg VI	4	2	2.08E-02	116.992	Fe VII	5	7	4.50E-04
108.0037	Al V	4	2	1.47E-02	111.8703	Fe VII	7	7	2.57E-02	117.106	Fe VII	9	11	4.27E-04
108.008	Ne V	3	5	2.45E-02	111.879	Na V	4	6	1.36E-02	117.127	Fe VII	9	7	3.65E-04
108.0576	Al V	4	4	3.92E-02	111.8986	Fe VII	7	5	2.43E-03	117.135	Fe VII	7	9	4.27E-03
108.0770	Fe VIII	6	8	1.88E-01	111.9304	Fe VII	9	7	6.23E-05	117.136	Fe VII	7	7	2.81E-05
108.0821	Fe VIII	6	6	9.40E-03	112.0307	Fe VII	9	7	1.91E-03	117.138	Fe VII	5	7	5.91E-03
108.090	Ne V	5	5	4.89E-03	112.077	Na V	4	2	4.52E-03	117.146	Fe VII	9	9	2.19E-05
108.1121	Al V	2	4	2.93E-02	112.2530	Fe VIII	4	6	9.32E-03	117.17	Fe XXII	2	2	6.17E-02
108.122	Fe XXI	1	3	5.31E-02	112.4716	Fe VIII	4	4	8.37E-02	117.173	F V	2	2	4.48E-04
108.355	Fe XIX	5	5	6.67E-02	112.4848	Fe VIII	6	6	8.68E-02	117.174	Fe VII	5	5	4.72E-02
108.3818	Fe VII	7	9	4.95E-02	112.7044	Fe VIII	6	4	6.19E-03	117.197	Fe VIII	6	8	1.05E-01
108.4067	Al V	2	2	5.85E-02	112.8301	F VI	1	3	2.19E-03	117.228	F V	2	4	2.23E-04
108.4328	Fe VII	7	9	2.22E-03	112.9059	Ca VIII	2	4	4.34E-02	117.275	F V	4	2	1.12E-04
108.4610	Al V	2	4	3.91E-01	112.932	Fe VIII	6	8	5.21E-02	117.282	Fe VII	7	7	4.46E-02
108.4959	Fe VII	5	7	3.07E-03	112.9415	F VII	2	4	1.90E-01	117.311	Fe VII	9	9	4.97E-02
108.5180	Fe VII	9	11	5.01E-02	112.9780	F VII	2	2	9.52E-02	117.312	Fe VII	9	7	3.46E-07
108.5323	Fe VII	9	9	2.56E-03	113.080	Fe VIII	4	6	1.28E-04	117.318	Fe VII	7	5	4.21E-03
108.5835	Fe VII	9	9	2.58E-02	113.2396	F V	2	4	1.50E-03	117.331	F V	4	4	5.58E-04
108.6198	Fe VII	7	7	2.31E-02	113.2593	F V	2	2	2.99E-03	117.458	Fe VII	9	7	3.31E-03
108.7710	Fe VII	9	7	1.72E-03	113.315	Fe VIII	6	6	1.19E-03	117.50	Fe XXI	3	3	1.22E-02
109.306	Ne VI	2	2	2.93E-02	113.3354	F V	4	4	3.73E-03	117.8535	Si V	1	3	2.46E-01
109.463	Ne VI	4	2	2.92E-02	113.3550	F V	4	2	7.47E-04	117.989	Na V	4	2	2.45E-02
109.5156	Al VI	5	3	4.91E-02	113.4505	Ca VIII	4	6	3.89E-02	117.989	Na V	4	4	4.90E-02



**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
117.989	Na V	4	6	7.34E-02	122.033	Mg V	1	3	2.58E-01	126.959	Mg IV	2	2	6.18E-03
118.000	O V	1	3	5.68E-03	122.370	Fe VII	5	3	6.11E-03	127.024	Fe VII	7	7	7.25E-04
118.424	Mg IV	4	4	2.24E-03	122.488	Ne VI	2	4	5.72E-01	127.068	Fe VII	7	5	5.79E-03
118.424	Mg IV	4	6	2.02E-02	122.685	Ne VI	4	4	5.71E-02	127.108	Fe VII	5	7	1.18E-01
118.478	Mg IV	4	2	1.96E-03	122.685	Ne VI	4	6	5.14E-01	127.116	Fe VII	7	9	1.10E-01
118.487	Mg IV	4	4	9.84E-03	122.869	Fe VII	5	5	1.13E-03	127.161	Mg IV	2	4	3.09E-03
118.495	Al V	4	2	1.33E-02	123.028	Fe VII	7	5	6.42E-03	127.231	Fe VII	9	7	6.51E-03
118.636	Ne V	1	3	4.78E-02	123.140	Fe VII	5	7	3.21E-05	127.256	Fe VII	9	11	1.12E-01
118.648	Fe VIII	4	4	7.11E-03	123.169	Mg IV	4	4	9.08E-03	127.278	Fe VII	7	7	7.38E-03
118.659	F V	4	6	2.15E-02	123.266	Mg IV	4	6	8.17E-02	127.323	Fe VII	9	9	5.74E-03
118.66	Fe XX	4	2	2.00E-02	123.293	F V	2	4	3.60E-03	127.387	Fe VII	5	7	4.41E-05
118.69	Fe XXI	3	1	1.61E-02	123.299	Fe VII	7	7	8.01E-04	127.428	Fe VII	7	9	3.19E-05
118.694	Ne V	3	1	1.59E-02	123.407	F V	4	4	3.60E-04	127.432	Fe VII	5	5	3.52E-04
118.694	Ne V	3	5	1.99E-02	123.407	F V	4	6	3.24E-03	127.486	Fe VII	9	7	9.10E-05
118.694	Ne V	3	3	1.19E-02	123.494	Fe VII	9	7	7.21E-03	127.557	Fe VII	7	7	3.34E-04
118.737	Mg IV	2	4	2.23E-02	123.508	Mg IV	2	4	9.06E-02	127.603	Fe VII	7	5	3.14E-05
118.762	Ne V	1	3	1.78E-01	123.661	F V	2	4	5.24E-02	127.636	Fe VII	9	9	3.72E-04
118.792	Mg IV	2	2	7.84E-03	123.75	Na VI	3	5	3.06E-02	127.695	Fe VII	5	7	1.73E-04
118.793	Ne V	5	3	1.19E-02	123.773	F V	4	6	4.72E-02	127.766	Fe VII	9	7	2.48E-05
118.793	Ne V	5	5	3.58E-02	123.775	F V	4	4	5.24E-03	127.866	Fe VII	7	7	1.30E-03
118.801	Mg IV	2	4	3.93E-03	123.83	Fe XXI	5	3	1.16E-02	127.936	Fe VII	7	9	1.24E-04
118.820	Ne V	3	3	4.45E-02	123.87	Na VI	1	3	7.32E-02	128.076	Fe VII	9	7	9.71E-05
118.820	Ne V	3	5	1.33E-01	123.92	Na VI	5	5	5.48E-02	128.146	Fe VII	9	9	1.45E-03
118.907	Fe VIII	6	4	4.25E-02	123.97	Na VI	3	3	1.83E-02	128.448	Fe VII	7	9	9.74E-03
118.919	Ne V	5	3	1.78E-03	124.15	Na VI	5	3	1.83E-02	128.465	Fe VII	5	7	1.35E-02
118.919	Ne V	5	5	2.67E-02	124.416	Mg IV	4	2	2.20E-02	128.639	Fe VII	7	7	1.02E-01
118.981	Al V	2	2	1.32E-02	124.525	Mg IV	4	4	2.41E-03	128.660	Fe VII	9	9	1.13E-01
119.010	Ne V	5	7	1.49E-01	124.540	Mg IV	4	6	2.16E-02	128.74	Fe XXI	1	3	4.78E-02
119.102	O V	1	3	2.95E-02	124.616	O V	1	3	5.00E-02	128.851	Fe VII	9	7	7.55E-03
119.327	F V	2	2	5.74E-05	124.641	Mg IV	4	2	6.76E-03	129.710	Mg IV	4	4	4.26E-02
119.380	Fe VIII	4	2	3.53E-02	124.650	Mg IV	4	4	3.39E-02	129.7291	Al IV	1	3	7.78E-01
119.433	F V	4	2	5.73E-05	124.762	Mg IV	2	2	2.20E-02	129.857	Mg IV	4	6	1.48E-01
119.976	F V	2	4	4.23E-02	124.871	Mg IV	2	4	2.40E-02	129.872	Fe VII	5	7	2.64E-01
119.983	Fe XIX	3	5	3.35E-02	124.988	Mg IV	2	2	2.70E-02	129.968	Mg IV	4	4	1.65E-02
120.023	F V	4	6	3.81E-02	124.998	Mg IV	2	4	1.35E-02	129.979	Mg IV	4	2	8.48E-03
120.030	Fe VII	5	7	1.35E-01	125.178	Na V	4	2	1.86E-01	130.049	Fe VII	7	7	1.65E-02
120.083	F V	4	4	4.22E-03	125.216	Na V	4	4	3.71E-01	130.086	Mg IV	2	4	1.69E-02
120.093	Ar VIII	2	4	2.92E-02	125.266	Fe VII	9	11	4.03E-02	130.249	Fe VII	7	9	2.47E-01
120.147	Ca IX	1	3	2.58E-01	125.286	Na V	4	6	5.57E-01	130.266	Fe VII	9	7	2.04E-04
120.157	Ar VIII	2	2	1.46E-02	125.389	F V	2	4	8.56E-04	130.345	Mg IV	2	4	1.65E-01
120.181	Fe VII	7	7	8.44E-03	125.461	F V	2	2	1.71E-03	130.356	Mg IV	2	2	3.39E-02
120.215	Fe VII	7	9	1.27E-01	125.462	Mg IV	4	2	1.12E-02	130.4134	Al V	4	2	1.99E-02
120.366	Fe VII	9	7	1.04E-04	125.506	F V	4	4	2.14E-04	130.466	Fe VII	9	9	1.28E-02
120.400	Fe VII	9	9	6.55E-03	125.524	Fe VII	7	9	3.96E-02	130.610	Ne V	1	3	5.19E-02
120.401	Fe VII	9	11	1.29E-01	125.5252	Al V	4	4	7.14E-03	130.619	Ne V	3	5	2.16E-02
120.524	F V	2	4	8.24E-03	125.5300	Al V	4	6	6.43E-02	130.680	Ne V	3	3	1.29E-02
120.564	F V	2	2	1.64E-02	125.579	F V	4	2	4.28E-04	130.738	Ne V	5	5	3.89E-02
120.633	F V	4	4	2.06E-02	125.726	Fe VII	9	9	2.05E-03	130.777	Fe VII	9	11	2.50E-01
120.672	F V	4	2	4.11E-03	125.742	Ne V	1	3	1.83E-02	130.800	Ne V	5	3	1.29E-02
120.841	Fe VII	5	7	3.29E-05	125.808	Ne V	3	1	6.11E-03	130.8472	Al V	4	4	9.90E-02
120.995	Fe VII	7	7	8.20E-04	125.808	Ne V	3	5	7.63E-03	130.941	Fe VIII	4	6	5.69E-01
121.183	Fe VII	9	7	7.36E-03	125.808	Ne V	3	3	4.58E-03	131.0015	Al V	2	2	7.91E-02
121.22	Fe XXI	5	5	3.56E-02	125.813	Mg IV	2	2	1.12E-02	131.240	Fe VIII	6	8	5.40E-01
121.318	O V	1	3	1.96E-04	125.918	Ne V	5	3	4.57E-03	131.2477	N V	2	4	2.03E-03
121.332	Fe VII	5	5	1.15E-03	125.918	Ne V	5	5	1.37E-02	131.2480	N V	2	2	1.02E-03
121.487	Fe VII	7	5	6.53E-03	125.921	Fe VII	5	7	4.21E-02	131.257	Fe VIII	6	6	2.70E-02
121.546	Mg IV	4	4	4.89E-04	126.0699	Al V	2	4	7.11E-02	131.4391	Al V	2	4	3.94E-02
121.553	Fe VII	5	3	6.17E-03	126.088	Fe VII	7	7	2.62E-03	131.520	F V	2	2	7.30E-03
121.645	Mg V	5	7	2.17E-01	126.292	Fe VII	9	7	3.23E-05	131.649	F V	4	2	7.29E-03
121.656	Mg V	5	5	3.88E-02	126.601	Mg IV	4	2	1.54E-03	131.990	Ne V	3	5	7.93E-02
121.658	Mg V	5	3	2.59E-03	126.802	Mg IV	4	4	7.73E-03	132.040	Ne V	5	7	8.88E-02
121.83	Fe XX	4	4	3.88E-02	126.855	Fe VII	5	7	2.90E-05	132.111	Ne V	5	5	1.58E-02
121.876	Mg IV	2	4	4.88E-03	126.899	Fe VII	5	5	1.02E-03	132.1221	Mg IV	4	4	2.57E-04
121.921	Mg V	3	5	1.93E-01	126.912	Fe VII	5	3	5.48E-03	132.1238	Mg IV	4	6	2.31E-03
121.923	Mg V	3	3	6.45E-02	126.929	F VI	1	3	4.46E-01	132.163	Mg V	5	5	3.09E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
132.176	Mg V	5	3	1.03E-02	138.391	Mg IV	2	2	1.52E-02	146.8379	Mg IV	4	2	1.41E-02
132.3777	N V	2	4	2.83E-03	138.639	Ne VI	4	2	2.83E-02	146.9522	Mg IV	4	6	2.96E-01
132.3782	N V	2	2	1.42E-03	138.689	Mg IV	2	4	7.59E-03	147.006	Mg IV	2	4	2.82E-02
132.475	Mg V	3	5	1.71E-02	139.0289	O V	1	3	5.79E-02	147.0515	Mg IV	4	4	3.28E-02
132.488	Mg V	3	3	1.02E-02	139.961	Na IV	5	5	6.92E-03	147.28	Ca XII	2	2	5.94E-02
132.492	Mg V	3	1	1.37E-02	139.964	Na IV	5	3	2.31E-03	147.320	Mg IV	2	2	5.62E-02
132.512	Mg IV	2	4	2.56E-03	140.1183	Mg IV	4	4	1.42E-02	147.4238	N V	2	4	2.00E-02
132.618	Mg V	1	3	4.10E-02	140.1717	Mg IV	4	6	1.28E-01	147.4273	N V	2	2	9.99E-03
132.687	F V	2	4	7.55E-03	140.178	Na IV	3	5	3.83E-03	147.535	Mg IV	2	4	3.27E-01
132.8026	Mg IV	4	4	4.50E-03	140.181	Na IV	3	1	3.06E-03	147.944	F V	2	4	1.46E-01
132.8142	Mg IV	4	6	4.05E-02	140.181	Na IV	3	3	2.31E-03	148.000	F V	4	6	1.31E-01
132.818	F V	4	4	1.89E-02	140.265	F V	2	2	1.20E-02	148.107	F V	4	4	1.46E-02
132.83	Fe XXIII	1	3	1.52E-01	140.274	Na IV	1	3	9.20E-03	148.642	Na V	4	6	6.45E-02
132.85	Fe XX	4	6	5.33E-02	140.3563	N V	2	4	1.06E-02	148.660	Ne IV	4	2	4.82E-02
132.885	F V	2	2	1.51E-02	140.3581	N V	2	2	5.31E-03	148.787	Ne IV	4	4	9.65E-02
133.017	F V	4	2	3.77E-03	140.412	F V	4	2	1.20E-02	148.856	Na V	4	4	4.29E-02
133.084	F V	2	4	1.03E-02	140.4249	Mg IV	4	2	7.91E-02	148.942	Ne IV	4	6	1.45E-01
133.197	Mg IV	2	4	4.49E-02	140.4730	Mg IV	4	2	2.74E-02	149.001	Na V	4	2	2.14E-02
133.208	F V	4	6	9.25E-03	140.5219	Mg IV	4	4	1.37E-01	150.004	Fe VII	5	7	6.17E-06
133.216	F V	4	4	1.03E-03	140.557	Mg IV	2	4	1.42E-01	150.0893	O VI	2	4	1.77E-01
133.482	Fe VII	5	7	1.12E-04	140.58	Ca XV	3	3	6.55E-02	150.1246	O VI	2	2	8.84E-02
133.669	Fe VII	7	7	2.80E-03	140.866	Mg IV	2	2	7.89E-02	150.168	Fe VII	5	5	2.16E-04
133.875	Fe VII	5	5	3.91E-03	140.914	Mg IV	2	2	1.10E-01	150.188	Fe VII	5	3	1.17E-03
133.898	Fe VII	9	7	2.51E-02	140.963	Mg IV	2	4	5.48E-02	150.240	Fe VII	7	7	1.54E-04
133.9926	N V	2	4	4.13E-03	141.04	Ca XII	4	2	6.21E-02	150.286	Na IV	5	3	1.24E-03
133.9933	N V	2	2	2.07E-03	142.15	Fe XXI	3	5	3.24E-02	150.292	Na IV	5	5	1.87E-02
134.064	Fe VII	7	5	2.23E-02	142.26	Fe XXI	3	3	1.08E-02	150.298	Na IV	5	7	1.05E-01
134.128	Fe VII	5	3	2.11E-02	142.435	Ne V	1	3	2.27E-01	150.334	F IV	3	5	1.02E-02
134.407	F V	2	4	1.28E-01	142.441	Ne V	3	1	7.56E-02	150.405	Fe VII	7	5	1.23E-03
134.537	F V	4	6	1.15E-01	142.519	Ne V	3	3	5.67E-02	150.422	F IV	5	5	1.83E-02
134.542	F V	4	4	1.28E-02	142.582	Ne V	3	5	9.45E-02	150.4923	O V	1	3	1.51E-05
134.9958	Li III	2	4	2.77E-01	142.661	Ne V	5	3	5.67E-02	150.530	Fe VII	9	7	1.38E-03
135.0012	Li III	2	2	1.39E-01	142.724	Ne V	5	5	1.70E-01	150.536	Na IV	3	3	3.10E-02
135.5232	O V	1	3	7.77E-02	143.219	Ca VIII	2	4	1.15E-01	150.543	Na IV	3	5	9.31E-02
135.656	Ne V	1	3	2.68E-02	143.219	Ne V	1	3	6.73E-01	150.642	Na IV	1	3	1.24E-01
135.732	Ne V	3	3	2.68E-02	143.273	Ne V	3	5	5.05E-01	150.688	Na IV	5	5	3.57E-02
135.77	Fe XXII	2	4	4.31E-02	143.304	Ne V	3	3	1.68E-01	150.714	Na IV	5	3	1.19E-02
135.861	Ne V	5	3	2.68E-02	143.344	Ne V	5	7	5.66E-01	150.807	Fe VII	5	7	6.59E-01
136.02	Fe XXII	4	2	1.33E-02	143.416	Ne V	5	5	1.01E-01	150.853	Fe VII	7	9	6.18E-01
136.4239	N V	2	4	6.38E-03	143.448	Ne V	5	3	6.72E-03	150.940	Na IV	3	5	1.97E-02
136.4250	N V	2	2	3.18E-03	144.019	Ne IV	4	6	4.32E-03	150.966	Na IV	3	3	1.19E-02
136.430	Na IV	5	3	2.91E-02	144.069	Ca VIII	4	6	1.02E-01	151.005	F IV	5	7	3.33E-02
136.547	Na IV	5	3	1.93E-02	144.108	Ca VIII	4	4	1.14E-02	151.023	Fe VII	9	11	6.26E-01
136.551	Na IV	5	5	5.81E-02	144.151	Ne IV	4	4	2.88E-03	151.047	Fe VII	7	7	4.12E-02
136.636	Na IV	3	3	2.91E-02	144.278	Ne IV	4	2	1.44E-03	151.050	Na IV	3	1	1.58E-02
136.724	Na IV	1	3	2.91E-02	144.31	Ca XV	5	3	6.38E-02	151.073	Na IV	1	3	4.74E-02
136.754	Na IV	3	3	1.93E-02	144.968	Na IV	5	3	8.28E-05	151.145	Fe VII	9	9	3.19E-02
136.758	Na IV	3	5	3.22E-02	144.972	Na IV	5	5	1.24E-03	151.340	Fe VII	9	7	5.07E-04
136.842	Na IV	1	3	7.72E-02	144.979	Na IV	5	7	6.95E-03	151.433	Fe VII	5	7	5.14E-02
136.847	Na IV	5	3	7.29E-04	145.201	Na IV	3	3	2.07E-03	151.488	Fe VII	7	9	3.72E-02
136.850	Na IV	5	5	1.09E-02	145.205	Na IV	3	5	6.20E-03	151.512	Fe VII	5	5	4.11E-01
136.855	Na IV	5	7	6.12E-02	145.300	Na IV	1	3	8.26E-03	151.516	O IV	2	4	4.22E-06
137.055	Na IV	3	3	1.82E-02	145.390	F V	2	2	2.10E-02	151.516	O IV	2	2	8.45E-06
137.057	Na IV	3	5	5.46E-02	145.548	F V	4	2	2.10E-02	151.52	Fe XXI	5	5	6.09E-03
137.143	Na IV	1	3	7.27E-02	145.65	Fe XXI	5	7	3.55E-02	151.604	O IV	4	2	2.11E-06
137.20	Ca XV	1	3	6.71E-02	146.062	Na IV	5	3	1.42E-03	151.604	O IV	4	4	1.05E-05
137.404	Mg V	5	3	7.27E-04	146.064	Na IV	5	7	1.19E-01	151.65	Fe XXI	5	3	4.05E-04
137.407	Mg V	5	5	1.09E-02	146.065	Na IV	5	5	2.13E-02	151.674	Fe VII	7	7	3.88E-01
137.411	Mg V	5	7	6.10E-02	146.083	Mg V	5	3	5.07E-02	151.753	Fe VII	7	5	3.66E-02
137.741	Mg V	3	3	1.81E-02	146.299	Na IV	3	3	3.56E-02	151.782	Fe VII	9	9	4.33E-01
137.745	Mg V	3	5	5.43E-02	146.302	Na IV	3	5	1.07E-01	151.970	Fe VII	9	7	2.88E-02
137.882	Mg V	1	3	7.24E-02	146.399	Na IV	1	3	1.42E-01	152.282	S VI	2	4	2.47E-03
137.9660	Mg IV	4	2	3.82E-03	146.465	Mg V	3	3	5.05E-02	152.290	S VI	2	2	1.24E-03
138.2615	Mg IV	4	4	1.90E-02	146.5260	Mg IV	4	4	7.07E-02	152.338	F V	2	4	3.05E-02
138.387	Ne VI	2	2	2.84E-02	146.623	Mg V	1	3	5.05E-02	152.391	F V	2	2	6.11E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
152.511	F V	4	4	7.63E-02	164.109	Ca XIII	1	3	1.05E-01	169.549	F IV	3	5	2.33E-02
152.564	F V	4	2	1.52E-02	164.17	Ca XVI	4	4	9.83E-02	169.583	O IV	4	2	2.92E-03
152.944	F IV	1	3	1.53E-02	164.7940	N IV	1	3	3.96E-03	169.610	F IV	5	3	1.40E-02
152.997	F IV	3	1	5.12E-03	164.82	Ar XIII	5	3	7.10E-02	169.661	F IV	5	5	4.19E-02
152.997	F IV	3	3	3.84E-03	165.093	Fe VI	6	8	4.75E-03	169.748	F IV	1	3	1.64E-01
153.011	F IV	3	5	6.40E-03	165.175	Fe VI	4	6	9.96E-03	169.790	F IV	3	5	1.23E-01
153.088	F IV	5	3	3.83E-03	165.278	Fe VI	8	8	7.11E-02	169.813	F IV	3	3	4.11E-02
153.102	F IV	5	5	1.15E-02	165.314	Fe VI	6	6	1.21E-01	169.839	F IV	5	7	1.38E-01
153.141	F IV	5	7	3.82E-02	165.489	Fe VII	5	3	1.57E-03	169.902	F IV	5	5	2.47E-02
154.88	Ca XVI	2	4	4.17E-02	165.499	Fe VI	8	6	4.26E-01	169.924	F IV	5	3	1.64E-03
155.082	Na IV	5	3	6.40E-03	165.500	Fe VI	4	4	1.39E-01	170.0740	N IV	1	3	1.31E-02
155.239	Na IV	5	3	7.99E-02	165.500	Fe VI	10	8	4.97E-01	170.577	Fe X	4	4	1.46E-01
155.349	Na IV	3	3	6.39E-03	165.530	Ar X	4	2	6.70E-02	170.630	Ar X	2	2	6.50E-02
155.446	Na IV	5	3	5.61E-02	165.630	Fe VII	5	5	2.90E-04	171.073	Fe IX	1	3	3.05E+00
155.462	Na IV	1	3	6.38E-03	165.640	Fe VI	6	4	3.71E-01	171.074	O IV	2	4	3.61E-02
155.507	Na IV	3	3	7.98E-02	165.722	Fe VII	5	7	8.27E-06	171.123	O IV	4	6	3.25E-02
155.508	Na IV	5	5	1.68E-01	165.780	Fe VI	4	2	3.48E-01	171.187	O IV	4	4	3.61E-03
155.620	Na IV	1	3	7.97E-02	165.919	Fe VII	7	5	1.65E-03	171.3285	S VI	2	4	1.03E-02
155.687	Na IV	3	1	7.47E-02	165.9450	N IV	1	3	4.09E-03	171.3645	S VI	2	2	5.15E-03
155.714	Na IV	3	3	5.60E-02	165.982	F V	2	4	5.44E-01	171.5756	Li II	1	3	4.40E-02
155.776	Na IV	3	5	9.33E-02	166.012	Fe VII	7	7	2.06E-04	171.59	Ca XV	1	3	5.94E-02
155.828	Na IV	1	3	2.23E-01	166.176	F V	4	6	4.90E-01	171.6507	Mg IV	4	4	7.13E-03
155.853	S VI	2	4	3.69E-03	166.187	F V	4	4	5.44E-02	171.6554	Mg IV	4	6	6.42E-02
155.865	S VI	2	2	1.84E-03	166.346	Li II	1	3	7.74E-03	172.1689	O V	1	3	3.95E-01
155.92	Fe XXII	4	6	3.37E-02	166.365	Fe VII	9	7	1.86E-03	172.1711	N IV	1	3	7.82E-05
156.493	Na IV	5	3	1.68E-03	166.641	O IV	2	4	2.10E-03	172.310	Mg IV	2	4	7.10E-02
156.508	Na IV	5	5	2.52E-02	166.744	O IV	4	6	1.89E-03	172.492	Ne IV	4	2	1.54E-01
156.537	Na IV	5	7	1.41E-01	166.748	O IV	4	4	2.10E-04	172.525	Ne IV	4	4	3.09E-01
156.681	Ca XIII	5	3	2.74E-02	167.0737	N IV	1	3	5.32E-03	172.620	Ne IV	4	6	4.63E-01
156.764	Na IV	3	3	4.18E-02	167.2401	Li II	1	3	1.25E-02	173.800	O IV	2	4	6.91E-03
156.780	Na IV	3	5	1.26E-01	167.44	Ca XVI	4	2	1.93E-02	173.852	O IV	2	2	1.38E-02
156.880	Na IV	1	3	1.67E-01	167.474	Ne V	3	5	3.18E-02	173.916	O IV	4	4	1.72E-02
157.626	Ne IV	4	6	2.28E-02	167.486	Fe VIII	4	4	4.81E-04	173.969	O IV	4	2	3.44E-03
157.781	Ne IV	4	4	1.51E-02	167.5608	O IV	2	4	5.65E-04	174.1042	O IV	2	4	2.88E-02
157.79	Ca XVI	2	2	8.18E-02	167.609	Ne V	1	3	7.63E-02	174.2212	O IV	4	4	2.88E-03
157.862	Ne IV	4	2	7.59E-03	167.655	Fe VIII	4	6	5.34E-05	174.2212	O IV	4	6	2.59E-02
158.079	O IV	2	2	2.83E-07	167.6692	O IV	4	4	5.64E-05	174.534	Fe X	4	6	1.28E+00
158.121	O IV	2	4	1.42E-07	167.670	Ne V	5	5	5.73E-02	174.6020	N IV	1	3	2.32E-02
158.175	O IV	4	2	7.09E-08	167.7086	O IV	4	6	5.08E-04	175.266	Fe X	2	4	1.41E+00
158.218	O IV	4	4	3.54E-07	167.7090	N IV	1	3	1.29E-02	175.443	Fe X	4	2	1.26E-01
158.342	F IV	1	3	2.63E-02	167.726	Ne V	3	3	1.91E-02	176.02	Ca XV	3	5	2.42E-02
158.398	F IV	3	1	8.79E-03	167.830	Ne V	3	1	2.54E-02	176.346	Fe VII	7	9	5.59E-05
158.398	F IV	3	3	6.59E-03	167.922	Ne V	5	3	1.91E-02	176.56	Fe XI	5	3	1.13E-02
158.428	F IV	3	5	1.10E-02	168.003	Fe VIII	6	4	3.54E-05	176.566	Ar VII	1	3	1.79E-01
158.496	F IV	5	3	6.58E-03	168.024	Fe VIII	4	4	9.54E-02	176.599	Fe VII	5	7	7.71E-05
158.526	F IV	5	5	1.98E-02	168.086	Na IV	5	7	1.93E-01	176.745	Fe VII	9	9	6.50E-04
158.601	F IV	5	7	6.38E-02	168.0957	Na IV	5	5	3.45E-02	176.92	Ca XV	3	3	1.45E-02
158.923	Ar VIII	2	4	8.29E-02	168.0988	Na IV	5	3	2.30E-03	176.927	Fe VII	7	7	5.82E-04
159.08	Ar XIII	1	3	7.36E-02	168.173	Fe VIII	6	6	4.96E-04	177.171	Fe VII	5	5	6.15E-04
159.099	O IV	2	4	3.54E-03	168.198	O IV	2	4	8.39E-04	177.243	Fe X	4	4	6.22E-01
159.175	Ar VIII	2	2	4.14E-02	168.254	O IV	2	2	1.68E-03	177.25	Ca XV	3	1	1.92E-02
159.197	O IV	4	4	8.85E-03	168.307	O IV	4	4	2.10E-03	177.329	Fe VII	9	7	4.32E-05
159.835	Ca XIII	3	1	3.58E-02	168.363	O IV	4	2	4.19E-04	177.502	Fe VII	7	5	5.48E-05
160.0724	Al IV	1	3	2.45E-01	168.405	Ca XIII	3	5	4.25E-02	178.0142	Li II	1	3	1.12E-01
160.2283	Mg IV	4	2	1.32E-02	168.4089	Na IV	3	5	1.71E-01	178.06	Fe XI	5	5	1.68E-01
160.802	Mg IV	2	2	1.31E-02	168.4120	Na IV	3	3	5.73E-02	178.546	F IV	3	5	1.74E-02
161.4939	S VI	2	4	5.87E-03	168.544	Fe VIII	6	4	5.71E-01	178.609	F IV	1	3	4.18E-02
161.5136	S VI	2	2	2.94E-03	168.5454	Na IV	1	3	2.29E-01	178.670	F IV	5	5	3.13E-02
161.61	Ar XIII	3	3	7.24E-02	168.7428	Li II	1	3	2.18E-02	178.681	F IV	3	3	1.04E-02
161.676	Ca IX	1	3	1.93E-03	168.87	Ca XVI	2	2	2.47E-02	178.724	F IV	3	1	1.39E-02
161.742	Ca XIII	5	5	7.98E-02	168.929	Fe VIII	4	2	4.74E-01	178.805	F IV	5	3	1.04E-02
161.75	Fe XXII	4	4	3.62E-03	169.434	F IV	1	3	5.60E-02	179.827	F IV	3	5	7.29E-03
162.5557	N V	2	4	4.57E-02	169.472	O IV	2	2	2.93E-03	179.840	F IV	1	3	1.74E-02
162.5644	N V	2	2	2.28E-02	169.481	F IV	3	1	1.86E-02	179.912	F IV	3	3	4.37E-03
162.925	Ca XIII	3	3	2.64E-02	169.498	F IV	3	3	1.40E-02	179.952	F IV	5	5	1.31E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
179.97	Ca XVI	4	2	2.32E-02	184.281	Ca V	5	5	9.39E-03	192.82	Ca XVII	1	3	1.85E-01
180.038	F IV	5	3	4.37E-03	184.409	Na III	2	2	2.45E-02	192.8229	N IV	1	3	5.98E-03
180.0693	Mg IV	4	2	2.02E-02	184.417	Ca V	5	3	3.13E-03	193.52	Fe XII	4	4	5.09E-01
180.073	Ar VI	2	4	4.04E-02	184.52	Ar XI	5	3	2.96E-02	193.804	Na III	4	4	3.29E-02
180.29	Ar XIV	2	4	4.54E-02	184.543	Fe X	4	2	2.90E-01	193.87	Ca XIV	4	6	6.49E-02
180.355	O IV	2	2	6.89E-03	184.71	Fe XI	5	3	1.66E-01	193.968	Fe VIII	4	4	2.42E-02
180.407	Fe X	2	2	4.90E-01	185.101	Ca V	3	5	5.20E-03	194.037	Na III	4	6	9.59E-02
180.41	Fe XI	5	7	9.33E-01	185.213	Fe VIII	6	8	6.77E-01	194.11	Ar XI	3	5	4.69E-02
180.481	O IV	4	2	6.89E-03	185.239	Ca V	3	3	3.12E-03	194.122	Na III	4	2	6.56E-03
180.60	Fe XI	3	3	2.78E-01	185.402	O IV	2	2	5.46E-03	194.168	Na III	4	4	1.06E-02
180.6143	Mg IV	4	4	1.01E-01	185.535	O IV	4	2	5.46E-03	194.319	Na III	2	4	1.31E-02
180.718	Ar VI	4	6	3.62E-02	185.538	Ca V	1	3	1.25E-02	194.39	Ar XIV	2	2	2.72E-02
180.792	Ar VI	4	4	4.02E-03	186.5143	Mg III	1	3	4.74E-01	194.638	Na III	2	2	2.62E-02
180.795	Mg IV	2	2	8.03E-02	186.599	Fe VIII	4	6	7.05E-01	194.661	Fe VIII	6	4	1.45E-01
181.023	Na III	4	6	3.96E-03	186.61	Ca XIV	4	4	4.50E-02	194.685	Na III	2	4	1.06E-01
181.027	Na III	4	4	4.39E-04	186.84	S XI	1	3	8.24E-02	195.12	Fe XII	4	6	7.58E-01
181.14	Fe XI	1	3	1.10E+00	187.024	S V	1	3	6.82E-03	195.388	Fe VII	9	11	7.20E-04
181.1497	O IV	2	4	4.91E-02	187.026	F IV	1	3	2.14E-02	195.389	Fe X	4	4	5.17E-05
181.2755	O IV	4	6	4.42E-02	187.08	Ar XI	3	1	3.89E-02	195.5285	Na III	4	6	9.16E-03
181.2764	O IV	4	4	4.91E-03	187.104	F IV	3	3	2.14E-02	195.5287	Na III	4	4	1.02E-03
181.301	Fe VII	5	7	1.55E-05	187.240	Fe VIII	6	6	3.34E-02	195.8596	O IV	2	4	1.14E-01
181.344	Mg IV	2	4	4.00E-02	187.240	F IV	5	3	2.14E-02	195.972	Fe VIII	4	2	1.20E-01
181.476	Na III	2	4	4.38E-03	187.46	Fe XI	5	3	1.71E-01	196.0061	O IV	4	6	1.03E-01
181.515	F IV	1	3	9.34E-02	187.97	Ar XIV	4	4	1.09E-01	196.0078	O IV	4	4	1.15E-02
181.530	F IV	3	5	7.00E-02	188.22	Fe XI	5	5	4.90E-01	196.045	Fe VII	5	7	7.55E-04
181.570	F IV	5	7	7.84E-02	188.67	S XI	3	3	8.16E-02	196.0525	Na III	2	4	1.02E-02
181.589	F IV	3	3	2.34E-02	188.81	Ar XI	5	5	8.68E-02	196.423	Fe VII	7	9	7.06E-04
181.648	Fe VII	7	7	3.86E-04	188.8582	Na III	4	4	3.10E-03	196.450	Fe VII	7	7	4.70E-05
181.658	F IV	5	5	1.40E-02	188.8711	Na III	4	6	2.79E-02	196.650	Fe VIII	4	4	7.54E-04
181.718	F IV	5	3	9.33E-04	189.02	Fe XI	3	1	2.17E-01	196.918	Fe VII	9	9	3.65E-05
181.7413	N IV	1	3	4.17E-02	189.14	Fe XI	3	3	1.62E-01	196.946	Fe VII	9	7	5.80E-07
181.757	Na IV	5	5	3.12E-02	189.3468	Na III	2	4	3.09E-02	197.2278	N IV	1	3	1.05E-01
181.766	Na IV	5	3	1.04E-02	189.57	Ar XI	3	3	2.88E-02	197.362	Fe VIII	6	4	4.51E-03
181.866	O IV	2	4	5.21E-03	189.73	Fe XI	1	3	6.47E-01	197.433	Fe XIII	1	3	7.28E-01
181.887	O IV	2	2	1.04E-02	190.043	Fe X	2	2	2.82E-01	198.549	S VIII	4	2	7.31E-02
181.90	Ca XV	5	5	4.21E-02	190.426	Na IV	5	3	7.37E-04	199.040	C IV	2	2	9.34E-04
181.994	O IV	4	4	1.30E-02	190.434	Na IV	5	5	1.10E-02	199.040	C IV	2	4	1.87E-03
182.015	O IV	4	2	2.60E-03	190.445	Na IV	5	7	6.20E-02	199.2792	Li II	1	3	4.62E-01
182.071	Fe VII	9	7	3.47E-03	190.457	Ca V	5	7	1.59E-02	199.550	Ca V	5	3	1.70E-02
182.123	Na IV	3	5	1.74E-02	190.560	Ca V	5	5	2.83E-03	199.7594	F IV	1	3	1.99E-01
182.132	Na IV	3	1	1.39E-02	190.567	F V	2	2	2.99E-02	199.8037	F IV	3	1	6.63E-02
182.133	Na IV	3	3	1.04E-02	190.603	Ca V	5	3	1.89E-04	199.8494	F IV	3	3	4.97E-02
182.17	Fe XI	3	5	8.25E-01	190.828	Na IV	3	3	1.84E-02	199.9341	F IV	3	5	8.28E-02
182.288	Na IV	1	3	4.16E-02	190.836	Na IV	3	5	5.52E-02	200.0045	F IV	5	3	4.96E-02
182.310	Fe X	2	4	2.42E-01	190.838	F V	4	2	2.98E-02	200.021	Fe XIII	3	5	5.39E-01
182.391	Fe VII	5	5	5.39E-04	190.95	Ar XI	1	3	1.14E-01	200.0894	F IV	5	5	1.49E-01
182.5115	Na III	4	2	2.25E-04	190.999	Na IV	1	3	7.35E-02	200.512	Ca V	3	3	1.70E-02
182.706	O IV	2	4	1.75E-02	191.012	Na III	4	2	1.40E-03	200.6760	C IV	2	4	2.60E-03
182.708	Ca VIII	2	2	7.72E-02	191.27	S XI	5	3	8.05E-02	200.6764	C IV	2	2	1.30E-03
182.741	Fe VII	7	5	3.08E-03	191.307	Na III	4	4	6.96E-03	200.7878	Ne III	5	3	6.34E-05
182.826	O IV	4	6	1.58E-02	191.36	Ar XIV	4	2	2.14E-02	200.7955	Ne III	5	5	9.52E-04
182.835	O IV	4	4	1.75E-03	191.437	Ca V	3	5	1.41E-02	200.8061	Ne III	5	7	5.33E-03
182.86	Ca XV	5	3	1.40E-02	191.4794	S VI	2	4	2.09E-02	200.863	Ca V	1	3	1.69E-02
182.9678	Na III	2	2	2.25E-04	191.481	Ca V	3	3	4.70E-03	200.98	Ca XV	1	3	5.40E-02
183.41	Ar XIV	2	2	8.94E-02	191.512	Na III	2	2	5.57E-03	201.0125	F IV	1	3	5.89E-01
183.46	Ca XIV	4	2	2.28E-02	191.5602	S VI	2	2	1.05E-02	201.0475	Ne III	3	3	1.59E-03
183.558	Na III	4	4	2.37E-03	191.800	Ca V	1	3	1.87E-02	201.0552	Ne III	3	5	4.76E-03
183.571	Na III	4	6	2.13E-02	191.808	Na III	2	4	2.78E-03	201.0655	F IV	3	5	4.42E-01
183.73	Na III	4	2	6.23E-03	192.004	Fe VIII	4	2	3.86E-03	201.1036	F IV	3	3	1.47E-01
183.747	Na III	4	4	3.12E-02	192.02	Fe XI	3	3	1.67E-01	201.127	Fe XIII	3	3	1.79E-01
183.945	Na III	4	2	2.45E-02	192.04	Fe XXIV	2	4	4.82E-02	201.1600	Ne III	1	3	6.33E-03
184.019	Na III	2	4	2.37E-02	192.39	Fe XII	4	2	2.56E-01	201.1604	F IV	5	7	4.94E-01
184.157	Ca VIII	4	2	7.66E-02	192.555	S V	1	3	1.12E-02	201.2225	F IV	5	5	8.82E-02
184.192	Na III	2	2	2.49E-02	192.63	Fe XI	1	3	1.66E-01	201.2607	F IV	5	3	5.88E-03
184.210	Na III	2	4	1.24E-02	192.82	Fe XI	3	5	2.65E-01	201.565	Fe X	2	4	5.01E-04

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
201.58	Fe XI	5	5	1.97E-02	209.619	Fe XIII	3	5	1.18E-01	220.083	Fe XIV	4	4	4.76E-02
201.689	Ar XIII	1	3	6.40E-02	209.916	Fe XIII	5	3	7.10E-02	220.3673	Ca IV	2	2	3.35E-03
202.044	Fe XIII	1	3	2.95E-01	210.461	Ar XIII	5	5	4.61E-02	220.6763	F III	4	6	4.37E-03
202.1485	Na III	4	4	6.78E-03	211.006	Ar XIII	5	3	1.53E-02	220.8400	F III	4	4	2.90E-03
202.1825	Na III	4	6	6.09E-02	211.315	Fe XIV	2	4	4.96E-01	220.9497	Ar VI	4	6	4.02E-02
202.414	Fe XIII	3	1	9.81E-02	211.4034	N IV	1	3	4.52E-03	220.9564	F III	4	2	1.45E-03
202.4909	Na III	4	2	5.21E-02	211.931	Fe VII	7	9	1.03E-02	220.9757	Ar VI	4	4	4.47E-03
202.606	S VIII	2	2	7.16E-02	212.121	S XII	2	4	5.06E-02	221.15	Ar XV	1	3	2.05E-01
202.7084	Na III	2	4	6.76E-02	212.1648	F III	4	6	1.80E-03	221.241	S IX	5	3	3.21E-02
202.7189	Na III	4	2	1.47E-02	212.2333	Ne III	5	7	3.82E-02	221.425	S XII	4	2	2.43E-02
202.7608	Na III	4	4	7.36E-02	212.2335	Ne III	5	5	6.83E-03	222.7852	C IV	2	4	1.80E-02
202.8847	O IV	2	2	2.18E-02	212.3125	F III	4	4	1.20E-03	222.7887	C IV	2	2	9.03E-03
202.9608	S V	1	3	2.01E-02	212.4139	C IV	2	4	9.68E-03	223.0897	Ne III	5	7	6.89E-02
202.989	Ca VII	3	5	6.04E-02	212.4157	C IV	2	2	4.83E-03	223.0986	Ne III	5	5	1.23E-02
203.0436	O IV	4	2	2.18E-02	212.508	Fe VII	9	9	5.31E-04	223.1042	Ne III	5	3	8.20E-04
203.0527	Na III	2	2	5.19E-02	212.5236	Ne III	3	5	3.41E-02	223.2512	S V	1	3	3.08E-02
203.0542	C IV	2	4	3.77E-03	212.663	Fe VII	9	11	1.04E-02	223.262	S IX	3	1	4.25E-02
203.0549	C IV	2	2	1.88E-03	213.768	Fe XIII	5	5	2.09E-01	223.4193	Ne III	3	5	6.14E-02
203.2819	Na III	2	2	5.87E-02	213.9747	O IV	2	4	2.51E-02	223.4249	Ne III	3	3	2.05E-02
203.3240	Na III	2	4	2.93E-02	214.0277	O IV	2	2	5.01E-02	223.5638	Ne III	1	3	8.19E-02
203.35	Ar XIV	4	2	2.60E-02	214.1516	O IV	4	4	6.26E-02	223.743	Si IX	1	3	9.47E-02
203.700	Ca VII	1	3	1.44E-01	214.2046	O IV	4	2	1.25E-02	224.250	Ar XII	4	6	7.09E-02
203.795	Fe XIII	5	5	1.06E-01	214.2300	Na III	4	4	5.54E-02	224.305	Fe VIII	6	8	3.01E-02
203.826	Fe XIII	5	7	5.93E-01	214.5868	Na III	4	2	1.11E-02	224.55	Ca XVI	4	6	4.14E-02
204.002	Ca VII	5	5	1.08E-01	214.804	F III	4	2	1.88E-02	224.726	S IX	5	5	9.50E-02
204.376	Ca VII	3	3	3.60E-02	214.804	F III	4	4	3.76E-02	225.024	Si IX	3	3	9.41E-02
204.736	Ca VII	3	1	4.79E-02	214.8589	Na III	2	4	2.21E-02	225.220	S IX	3	3	3.16E-02
204.943	Fe XIII	5	3	7.02E-03	214.8624	F III	4	6	5.64E-02	225.78	Ca XVI	4	4	4.58E-03
205.257	Ar XIII	3	5	2.62E-02	215.0455	Na III	4	4	2.30E-02	226.034	O III	5	7	3.25E-04
205.403	Ca VII	5	3	3.58E-02	215.167	S XII	2	2	9.98E-02	226.0550	F III	4	2	3.20E-02
205.4864	Na IV	5	3	5.27E-02	215.2178	Na III	2	2	4.41E-02	226.0938	F III	4	4	6.39E-02
205.774	Ar XIII	3	3	1.57E-02	215.3362	Na III	4	6	2.07E-01	226.1690	F III	4	6	9.58E-02
205.8368	O IV	2	2	2.26E-03	215.37	Ca XV	5	7	4.23E-02	226.579	S IX	1	3	1.25E-01
205.914	Fe XIII	3	3	7.23E-02	215.490	Ar XII	4	2	2.46E-02	227.000	Si IX	5	3	9.33E-02
205.924	Ar XIII	3	1	2.09E-02	215.6792	Na III	2	4	2.29E-01	227.2469	Ne III	5	3	4.93E-02
205.9546	Na IV	3	3	5.26E-02	216.62	Ca XV	5	3	5.01E-04	227.2579	Ca IV	4	4	5.27E-04
206.0005	O IV	4	2	2.26E-03	217.03	Ca XV	5	5	7.51E-03	227.3078	Ca IV	4	6	4.74E-03
206.1540	Na IV	1	3	5.25E-02	217.3265	Ne III	5	7	2.49E-02	227.4313	Ne III	5	3	3.72E-02
206.6326	C IV	2	4	5.81E-03	217.3322	Ne III	5	5	4.44E-03	227.49	S XII	2	2	3.04E-02
206.6336	C IV	2	2	2.90E-03	217.3378	Ne III	5	3	2.97E-04	227.4943	Ne III	5	5	1.12E-01
206.86	Fe XI	3	5	1.06E-02	217.6365	Ne III	3	5	2.21E-02	227.5796	Ne III	3	3	4.92E-02
206.8729	Na III	4	2	3.48E-03	217.6421	Ne III	3	3	7.40E-03	227.7238	Ne III	1	3	4.92E-02
207.1826	O IV	2	4	1.26E-01	217.691	Fe VIII	4	6	3.26E-02	227.7371	Ne III	3	1	4.95E-02
207.2386	O IV	4	6	1.13E-01	217.7740	Ne III	1	3	2.96E-02	227.7646	Ne III	3	3	3.71E-02
207.2959	Na III	4	4	1.74E-02	218.1306	Ne III	5	5	3.01E-02	227.8277	Ne III	3	5	6.19E-02
207.3483	O IV	4	4	1.26E-02	218.1816	Ne III	5	3	9.99E-03	227.9090	Ne III	1	3	1.49E-01
207.4593	Na III	2	2	1.39E-02	218.200	S XII	4	4	1.23E-01	228.628	Ca VI	4	6	1.00E-01
207.712	Fe VII	5	7	1.12E-02	218.290	Ar XII	4	4	4.85E-02	228.8264	O III	1	3	4.79E-03
207.8847	Na III	2	4	6.93E-03	218.3407	Ne III	5	3	8.77E-04	228.832	S IX	3	5	5.19E-02
208.167	Fe VII	7	7	6.99E-04	218.3456	Ne III	5	7	7.37E-02	228.8615	Ne III	5	3	8.02E-04
208.33	Ca XV	3	3	1.30E-02	218.3572	Ne III	5	5	1.32E-02	228.8797	Ca IV	2	4	5.23E-03
208.4072	Ne III	5	5	8.82E-03	218.4371	Ne III	3	5	1.67E-02	228.8852	Ne III	5	5	1.20E-02
208.4089	Ne III	5	3	2.94E-03	218.4452	Ne III	5	3	4.71E-03	228.8857	O III	3	3	4.79E-03
208.480	Ne IV	4	6	6.63E-02	218.4882	Ne III	3	3	9.97E-03	228.9218	Ne III	5	7	6.74E-02
208.59	Ca XVI	2	4	4.96E-02	218.5120	Ne III	3	1	1.34E-02	228.9868	O III	5	3	4.79E-03
208.6867	Ne III	3	1	3.92E-03	218.564	Fe VIII	6	6	1.55E-03	229.1989	Ne III	3	3	2.01E-02
208.6870	Ne III	3	5	4.90E-03	218.6211	Ne III	1	3	4.00E-02	229.2227	Ne III	3	5	6.01E-02
208.6887	Ne III	3	3	2.93E-03	218.6478	Ne III	3	3	2.19E-02	229.3452	Ne III	1	3	8.00E-02
208.72	Ca XV	3	5	3.90E-02	218.6643	Ne III	3	5	6.57E-02	229.734	Ca VI	4	4	6.65E-02
208.723	Fe VII	9	7	8.60E-06	218.7526	Ne III	3	3	4.71E-03	229.8703	Na III	4	2	1.25E-02
208.732	Ne IV	4	4	4.42E-02	218.7809	Ne III	1	3	8.76E-02	230.089	Fe X	4	4	2.02E-04
208.8099	Ne III	1	3	1.18E-02	218.8634	Ca IV	4	2	3.37E-03	230.1050	F III	4	2	2.62E-02
208.899	Ne IV	4	2	2.21E-02	218.8858	Ne III	1	3	4.70E-03	230.1126	F III	4	4	5.23E-02
209.2742	N V	2	4	1.59E-01	219.123	Fe XIV	4	6	4.30E-01	230.1238	F III	4	6	7.85E-02
209.3076	N V	2	2	7.96E-02	219.9032	Ar VI	2	4	4.49E-02	230.1390	He II	2	4	1.07E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
230.1391	He II	2	2	5.35E-04	240.243	Fe X	2	4	1.05E-03	250.14	Al VIII	5	3	1.02E-01
230.495	Ca VI	4	2	3.31E-02	240.2737	F IV	3	1	2.67E-02	250.1654	Ca IV	2	4	4.76E-03
230.5945	Na III	2	2	1.24E-02	240.3694	F IV	5	3	2.00E-02	250.5121	Na III	4	4	7.01E-03
230.6856	He II	2	2	7.38E-04	240.5460	F III	4	6	7.15E-03	250.5169	Na III	4	6	6.31E-02
230.6856	He II	2	4	1.48E-03	240.696	Fe XIII	1	3	2.04E-01	251.1340	Ne III	5	7	1.47E-01
230.7680	N III	2	4	4.53E-04	240.7350	F III	4	4	4.77E-03	251.1420	Ne III	5	5	2.63E-02
230.7890	N III	2	2	9.06E-04	240.8570	F III	4	2	2.38E-03	251.1449	Ne III	5	3	1.76E-03
230.8609	N III	4	4	1.13E-03	240.859	O III	1	3	3.72E-02	251.3695	Ca IV	2	2	9.47E-03
230.8819	N III	4	2	2.27E-04	240.925	O III	3	3	9.32E-03	251.3725	Na III	2	4	6.99E-02
231.0431	Fe VII	7	9	5.17E-03	240.925	O III	3	5	2.79E-02	251.5484	Ne III	3	5	1.32E-01
231.097	Fe VIII	6	8	1.31E-02	240.9344	Ca IV	2	2	3.88E-02	251.5513	Ne III	3	3	4.38E-02
231.4541	He II	2	2	1.06E-03	241.037	O III	5	3	3.72E-04	251.7274	Ne III	1	3	1.75E-01
231.4541	He II	2	4	2.12E-03	241.037	O III	5	5	5.58E-03	251.7339	Ca IV	2	4	6.65E-02
231.520	Fe X	4	4	2.73E-03	241.037	O III	5	7	3.13E-02	251.952	Fe XIII	5	3	1.94E-01
231.6909	Fe VII	5	7	7.13E-03	241.2734	Ca IV	4	2	3.70E-04	252.197	Fe XIV	2	4	1.49E-01
231.7284	Fe VII	9	9	6.01E-02	241.3362	Ca IV	2	4	4.50E-02	253.79	Si X	2	4	5.82E-02
231.7336	Mg III	1	3	2.39E-01	241.7076	Ca IV	2	4	7.38E-04	255.0394	O III	3	5	2.87E-03
231.884	Fe VIII	4	6	1.37E-02	241.90	Ar XIII	3	3	1.41E-02	255.10	Fe XXIV	2	2	1.81E-02
231.9774	Ca IV	4	4	1.51E-03	242.20	Ar XIII	3	5	4.24E-02	255.1555	O III	1	3	6.88E-03
231.9834	Ca IV	4	6	1.36E-02	242.3922	Ca IV	4	2	6.96E-03	255.1649	O III	5	5	5.16E-03
232.0462	Fe VII	5	7	5.30E-04	242.3927	Ca IV	4	4	4.83E-02	255.2293	O III	3	3	1.72E-03
232.2567	Fe VII	7	7	5.38E-02	242.594	S XI	3	5	2.91E-02	255.2860	O III	3	1	2.29E-03
232.4428	Fe VII	5	5	5.68E-02	242.849	S XI	3	3	1.74E-02	255.3550	O III	5	3	1.72E-03
232.5842	He II	2	4	3.21E-03	242.872	S XI	3	1	2.32E-02	255.7234	F III	4	2	1.13E-01
232.5843	He II	2	2	1.60E-03	243.0264	He II	2	4	1.93E-02	255.7699	F III	4	4	2.25E-01
232.6138	Fe VII	7	7	1.32E-02	243.0269	He II	2	2	9.67E-03	255.8627	F III	4	6	3.38E-01
232.876	Fe VIII	6	6	6.48E-04	243.1023	Ca IV	2	2	1.47E-03	256.3166	He II	2	4	5.27E-02
232.9493	Fe VII	9	7	3.99E-03	243.740	Ar XIV	2	4	5.36E-02	256.3177	He II	2	2	2.63E-02
233.0123	Fe VII	7	5	5.07E-03	244.2382	Ca IV	2	2	6.91E-03	256.38	Si X	2	2	1.15E-01
233.3085	Fe VII	9	7	1.18E-01	244.2387	Ca IV	2	4	1.91E-02	256.685	S XIII	1	3	2.30E-01
233.6008	N III	2	4	6.91E-04	244.3071	O III	3	5	1.21E-03	257.147	S X	4	2	2.69E-02
233.6200	N III	2	2	1.38E-03	244.4223	O III	5	5	2.18E-03	257.372	Ar XIV	4	6	4.57E-02
233.6676	Ca IV	2	4	1.50E-02	244.4237	O III	1	3	2.90E-03	257.394	Fe XIV	2	2	2.93E-01
233.6960	N III	4	4	1.72E-03	244.4913	O III	3	3	7.25E-04	257.963	Ca V	5	5	3.86E-02
233.7152	N III	4	2	3.45E-04	244.5350	O III	3	1	9.67E-04	257.987	Ar XIV	4	4	5.06E-03
233.7625	Fe VII	5	5	1.84E-02	244.6067	O III	5	3	7.25E-04	258.247	Ca V	5	3	1.29E-02
234.3385	Fe VII	7	5	1.05E-01	244.9034	C IV	2	4	4.07E-02	258.37	Si X	4	4	1.43E-01
234.3472	He II	2	4	5.20E-03	244.9113	C IV	2	2	2.03E-02	259.496	S X	4	4	5.34E-02
234.3473	He II	2	2	2.60E-03	246.004	Si VI	4	2	8.02E-02	259.574	Ca V	3	5	2.13E-02
234.50	S XII	4	2	2.95E-02	246.209	Fe XIII	3	3	1.99E-01	259.861	Ca V	3	3	1.28E-02
235.2229	Fe VII	5	3	9.88E-02	246.895	S XI	5	5	5.14E-02	259.987	Ca V	3	1	1.70E-02
235.5568	S V	1	3	7.87E-03	247.159	S XI	5	3	1.71E-02	260.450	Ca V	1	3	5.10E-02
236.27	Ar XIII	1	3	5.79E-02	247.2051	N IV	1	3	3.27E-01	261.06	Si X	4	2	2.82E-02
237.3307	He II	2	4	9.30E-03	247.40	Al VIII	1	3	1.03E-01	262.6617	O III	1	3	1.09E-02
237.3309	He II	2	2	4.65E-03	248.2291	Ca IV	4	4	1.20E-02	262.7266	O III	3	1	3.63E-03
237.9941	N III	2	4	8.63E-04	248.3204	N III	2	4	2.74E-03	262.7398	O III	3	3	2.71E-03
238.0351	N III	2	2	1.72E-03	248.3703	N III	2	2	5.48E-03	262.7476	O III	3	5	4.53E-03
238.0930	N III	4	4	2.15E-03	248.4279	N III	4	4	6.84E-03	262.8731	O III	5	3	2.71E-03
238.1340	N III	4	2	4.32E-04	248.45	Al VIII	3	3	1.02E-01	262.8809	O III	5	5	8.15E-03
238.1941	Ne III	5	3	1.13E-02	248.4779	N III	4	2	1.37E-03	263.6942	O III	1	3	1.04E-01
238.3598	O IV	2	4	5.04E-01	248.5380	O III	1	3	6.64E-02	263.7271	O III	3	5	7.78E-02
238.5596	Ne III	3	3	1.13E-02	248.5718	O III	3	5	4.98E-02	263.7729	O III	3	3	2.59E-02
238.5697	O IV	4	6	4.54E-01	248.6079	O III	3	3	1.66E-02	263.8170	O III	5	7	8.72E-02
238.5792	O IV	4	4	5.04E-02	248.6158	O III	5	7	5.58E-02	263.8614	O III	5	5	1.56E-02
238.703	Fe X	2	4	1.95E-03	248.6391	Ca IV	4	6	6.06E-02	263.9073	O III	5	3	1.04E-03
238.7180	Ne III	1	3	1.13E-02	248.6911	O III	5	5	9.97E-03	264.230	S X	4	6	7.86E-02
239.1378	Ca IV	4	2	9.79E-03	248.71	Ar XIII	5	7	4.62E-02	264.2582	O III	1	3	7.36E-02
239.5336	Ca IV	4	4	4.54E-03	248.7272	O III	5	3	6.64E-04	264.3251	O III	3	1	2.46E-02
239.816	S XI	1	3	7.05E-02	248.9872	S VI	2	4	5.47E-02	264.3372	O III	3	3	1.84E-02
239.8552	F IV	3	5	3.34E-02	249.124	Si VI	2	2	7.92E-02	264.3457	O III	3	5	3.07E-02
239.8996	Ca IV	4	4	1.86E-03	249.16	Ar XIII	5	3	5.49E-04	264.4721	O III	5	3	1.84E-02
240.0155	F IV	1	3	8.01E-02	249.2714	S VI	2	2	2.74E-02	264.4806	O III	5	5	5.52E-02
240.0537	Ca IV	4	6	4.08E-02	249.4146	Ca IV	4	2	2.39E-03	264.787	Fe XIV	4	4	3.55E-01
240.0787	F IV	5	5	6.01E-02	249.48	Ar XIII	5	5	8.23E-03	264.8226	N III	2	4	6.54E-03
240.1453	F IV	3	3	2.00E-02	249.7734	Ca IV	4	4	6.70E-03	264.8460	N III	2	2	1.31E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
264.9449	N III	4	4	1.64E-02	276.9456	Fe VI	8	8	4.36E-03	291.8007	Fe VI	6	4	6.87E-02
264.9684	N III	4	2	3.27E-03	277.001	Mg VII	3	3	1.12E-01	291.811	S XI	5	5	9.16E-03
266.8055	N III	2	4	2.84E-03	277.2332	Fe VI	4	6	6.10E-04	292.1390	Ar VI	2	2	8.27E-02
266.8471	N III	2	2	5.68E-03	277.25	Si X	4	2	3.42E-02	292.4424	N III	2	4	4.84E-02
266.8945	Na III	4	2	2.03E-02	277.5701	Fe VI	10	8	3.05E-02	292.5907	N III	4	6	4.35E-02
266.9298	N III	4	4	7.09E-03	277.6268	Fe VI	6	6	7.42E-03	292.5916	N III	4	4	4.83E-03
266.9714	N III	4	2	1.42E-03	277.9466	Fe VI	4	4	8.52E-03	292.763	Si IX	3	5	3.29E-02
266.9716	O III	1	3	1.18E-01	278.1496	Fe VI	8	6	2.61E-02	292.800	Si IX	3	1	2.63E-02
266.9868	O III	3	5	8.86E-02	278.2447	Fe VI	4	2	2.13E-02	292.857	Si IX	3	3	1.98E-02
267.0267	Ne III	5	5	3.06E-02	278.3422	Fe VI	6	4	2.27E-02	293.0436	Fe VI	8	10	1.47E-02
267.0306	O III	5	7	9.92E-02	278.402	Mg VII	5	3	1.11E-01	293.3807	Fe VI	6	8	2.52E-02
267.0314	Ne III	5	3	1.02E-02	278.4367	N III	2	2	1.15E-03	293.4875	Fe VI	10	12	1.88E-02
267.0523	O III	3	3	2.95E-02	278.443	Si VII	3	5	5.81E-02	293.7429	Fe VI	10	10	1.29E-01
267.1244	O III	5	5	1.78E-02	278.5719	N III	4	2	1.15E-03	293.8204	Fe VI	4	6	2.82E-02
267.1900	O III	5	3	1.18E-03	278.694	Al V	4	2	8.39E-02	293.9646	Fe VI	8	8	1.08E-01
267.4861	Ne III	3	5	1.70E-02	279.6309	O IV	2	2	3.14E-02	294.0349	Ar VI	4	2	8.22E-02
267.4905	Ne III	3	1	1.36E-02	279.9330	O IV	4	2	3.14E-02	294.1171	S IV	2	4	9.70E-04
267.4909	Ne III	3	3	1.02E-02	280.0260	C III	1	3	1.64E-02	294.2624	Fe VI	6	6	9.67E-02
267.6428	Na III	4	4	1.01E-01	280.1090	O III	3	5	4.61E-03	294.2789	S IV	2	2	1.93E-03
267.6901	Ne III	1	3	4.07E-02	280.15	Al IX	2	4	6.28E-02	294.3369	Fe VI	8	10	1.79E-02
267.8713	Na III	2	2	8.07E-02	280.2337	O III	1	3	1.11E-02	294.5163	Fe VI	4	4	1.12E-01
268.348	N III	2	4	5.97E-03	280.2605	O III	5	5	8.30E-03	294.6682	Fe VI	10	8	1.17E-02
268.473	N III	4	4	5.97E-04	280.3226	O III	3	3	2.77E-03	294.8498	Fe VI	8	6	1.88E-02
268.473	N III	4	6	5.37E-03	280.4081	O III	3	1	3.69E-03	294.9425	S IV	4	4	2.42E-03
268.6251	Na III	2	4	4.03E-02	280.4744	O III	5	3	2.77E-03	294.9605	Fe VI	6	4	1.87E-02
269.0726	N III	2	2	5.44E-04	281.394	Al V	2	2	8.31E-02	295.0151	Fe VI	6	8	1.79E-02
269.1989	N III	4	2	5.43E-04	281.402	S XI	1	3	6.33E-02	295.0423	Fe VI	10	10	1.29E-03
270.074	N III	2	4	7.82E-03	282.0632	N III	2	4	2.71E-02	295.0870	S IV	2	4	8.90E-03
270.201	N III	4	4	7.82E-04	282.2020	N III	4	4	2.71E-03	295.1051	S IV	4	2	4.83E-04
270.201	N III	4	6	7.04E-03	282.2020	N III	4	6	2.44E-02	295.1692	Ne II	4	2	7.71E-03
270.300	Ca V	5	7	7.40E-02	282.42	Al IX	2	2	1.24E-01	295.6055	Fe VI	8	8	2.11E-03
270.324	C III	1	3	7.72E-03	283.1406	Ne III	5	3	7.35E-04	295.6337	Fe VI	4	6	2.00E-02
270.493	Ca V	5	5	1.31E-02	283.1567	Ne III	5	5	1.10E-02	295.8396	S IV	4	6	7.99E-03
270.521	Fe XIV	4	2	6.96E-02	283.1803	Ne III	5	7	6.18E-02	295.8506	Ne II	2	2	7.69E-03
270.570	Ca V	5	3	8.79E-04	283.6573	Ne III	3	3	1.84E-02	295.9178	S IV	4	4	8.88E-04
271.0807	N III	2	2	6.34E-04	283.6734	Ne III	3	5	5.51E-02	296.0813	Fe VI	6	6	2.14E-03
271.2089	N III	4	2	6.34E-04	283.8813	Ne III	1	3	7.34E-02	296.117	Si IX	5	5	5.86E-02
271.98	Si X	2	2	3.49E-02	284.04	Al IX	4	4	1.55E-01	296.213	Si IX	5	3	1.95E-02
272.263	Ca V	3	5	6.55E-02	284.163	Fe XV	1	3	8.24E-01	296.3170	Fe VI	10	8	3.70E-05
272.342	Ca V	3	3	2.19E-02	284.970	Ca V	5	3	6.58E-02	296.5494	Ca IV	4	2	1.59E-03
272.524	N III	2	4	1.10E-02	285.587	S XI	3	3	1.56E-02	296.6760	Fe VI	8	6	5.93E-05
272.639	Si VII	5	3	3.56E-02	285.822	S XI	3	5	4.68E-02	296.9570	Ca III	1	3	1.17E+00
272.654	N III	4	4	1.10E-03	285.8574	N III	2	2	1.91E-03	299.3170	Ca IV	2	2	1.58E-03
272.654	N III	4	6	9.92E-03	286.0000	N III	4	2	1.91E-03	299.518	S XII	4	6	5.10E-02
272.990	Ca V	1	3	8.71E-02	286.0949	S V	1	3	9.83E-02	299.6596	N III	2	2	5.45E-03
273.5339	S IV	2	4	2.73E-03	286.38	Al IX	4	2	3.07E-02	299.792	S XII	4	4	5.66E-03
273.7903	S IV	2	2	5.47E-03	286.936	Ca V	3	3	6.53E-02	299.8163	N III	4	2	5.44E-03
273.9770	N III	2	2	8.10E-04	287.655	Ca V	1	3	6.52E-02	300.3314	S IV	2	2	3.41E-03
274.051	C III	1	3	1.13E-02	288.4232	C III	1	3	3.25E-03	300.5170	Si IV	2	4	2.07E-03
274.1079	N III	4	2	8.10E-04	288.434	S XII	2	4	5.89E-02	300.5315	Si IV	2	2	1.04E-03
274.175	Si VII	3	1	4.72E-02	289.151	Fe XIV	4	2	5.48E-02	300.56	Al IX	2	2	3.77E-02
274.203	Fe XIV	2	2	5.78E-02	289.9296	Fe VI	6	8	8.82E-04	301.1921	S IV	4	2	3.40E-03
274.2476	S IV	4	4	6.82E-03	290.4669	Fe VI	4	6	1.85E-03	302.190	Ca XVIII	2	4	5.38E-02
274.5053	S IV	4	2	1.37E-03	290.4998	Fe VI	8	8	1.32E-02	303.325	Si XI	1	3	2.65E-01
275.2824	O III	1	3	1.39E-02	290.690	Si IX	1	3	7.95E-02	303.355	Fe XIII	1	3	6.49E-02
275.353	Si VII	5	5	1.06E-01	290.8446	S IV	2	2	2.07E-03	303.4129	O III	1	3	1.60E-01
275.3682	O III	3	3	1.39E-02	290.8989	Fe VI	6	6	2.25E-02	303.4607	O III	3	1	5.32E-02
275.5146	O III	5	3	1.39E-02	291.0197	Fe VI	4	2	6.46E-02	303.5171	O III	3	3	3.99E-02
275.667	Si VII	3	3	3.52E-02	291.1869	Fe VI	10	8	9.23E-02	303.6223	O III	3	5	6.66E-02
276.154	Mg VII	1	3	1.12E-01	291.3260	C III	1	3	4.51E-02	303.6950	O III	5	3	3.99E-02
276.193	N III	2	4	1.65E-02	291.3660	Fe VI	4	4	2.58E-02	303.7804	He II	2	4	2.77E-01
276.326	N III	4	4	1.66E-03	291.4730	Fe VI	8	6	7.90E-02	303.7858	He II	2	2	1.39E-01
276.326	N III	4	6	1.49E-02	291.566	S XI	5	3	6.11E-04	303.8003	O III	5	5	1.20E-01
276.4274	Fe VI	6	8	2.91E-04	291.578	S XI	5	7	5.13E-02	305.05	Al IX	4	2	3.72E-02
276.839	Si VII	1	3	1.40E-01	291.6517	S IV	4	2	2.06E-03	305.5962	O III	1	3	4.70E-01

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
305.6561	O III	3	5	3.52E-01	322.757	Ca V	5	5	1.75E-03	335.410	Fe XVI	2	4	2.65E-01
305.7019	O III	3	3	1.18E-01	323.0680	Ca IV	2	4	1.56E+00	336.553	Ar V	3	5	5.94E-02
305.7562	N III	2	2	6.79E-03	323.307	Mg IV	2	2	8.65E-02	336.554	Ca V	3	3	4.02E-03
305.7674	O III	5	7	3.95E-01	323.4307	N III	2	4	1.73E-02	337.543	Ca V	1	3	1.60E-02
305.8365	O III	5	5	7.06E-02	323.4872	N III	2	2	3.48E-02	337.554	Ar V	1	3	1.42E-01
305.8824	O III	5	3	4.70E-03	323.51	Al VIII	1	3	8.51E-02	337.993	Ar V	5	5	1.07E-01
305.9193	N III	4	2	6.79E-03	323.6133	N III	4	4	4.34E-02	338.056	Ca V	3	5	6.66E-03
307.249	Al VI	5	3	3.76E-02	323.6698	N III	4	2	8.69E-03	338.426	Ar V	3	3	3.55E-02
308.563	Al VI	3	1	4.99E-02	323.8752	S IV	2	2	3.19E-05	338.825	Ca VII	1	3	1.14E+00
309.596	Al VI	5	5	1.12E-01	324.109	Ca V	3	3	2.90E-03	338.8312	Ca IV	4	2	1.05E-01
309.850	Al VI	3	3	3.73E-02	324.477	Ca V	5	7	9.73E-03	339.006	Mg VIII	4	2	4.05E-02
310.1697	C III	1	3	2.84E-02	324.5682	Ne II	4	4	5.00E-04	339.007	Ar V	3	1	4.71E-02
310.2335	Si IV	2	4	3.25E-03	324.5686	Ne II	4	6	4.50E-03	339.882	Ar V	5	3	3.53E-02
310.2575	Si IV	2	2	1.63E-03	324.8763	S IV	4	2	3.18E-05	339.966	Ca VII	3	5	8.53E-01
310.907	Al VI	1	3	1.49E-01	325.026	Ca V	1	3	1.16E-02	340.2839	Ca IV	4	4	5.22E-01
311.5476	N III	2	4	1.59E-02	325.281	Ca V	3	5	8.67E-03	340.385	Ca V	5	3	2.83E-01
311.549	Fe XIII	3	5	2.63E-02	325.31	Al VIII	3	1	2.82E-02	340.700	Ca VII	3	3	2.84E-01
311.6309	N III	4	6	1.44E-02	325.31	Al VIII	3	5	3.53E-02	341.113	Fe XI	5	3	1.60E-02
311.7170	N III	4	4	1.60E-03	325.31	Al VIII	3	3	2.12E-02	341.2868	Ca IV	4	2	4.50E-01
311.796	Mg VIII	2	4	6.86E-02	325.3924	Ne II	2	4	4.99E-03	341.4206	S IV	2	4	4.64E-03
311.926	Na VI	1	3	1.24E-01	326.5170	Ne II	4	4	3.94E-03	341.7995	S IV	2	2	9.27E-03
312.164	Fe XIII	3	3	1.58E-02	326.5376	Ne II	4	6	3.55E-02	341.949	Si IX	1	3	7.05E-02
312.237	Al VI	3	5	6.17E-02	326.7856	Ne II	4	2	2.38E-02	342.395	Ca VII	5	7	9.48E-01
312.4202	C IV	2	4	1.35E-01	327.1371	Si IV	2	4	5.57E-03	342.4492	Ca IV	2	2	4.15E-01
312.4511	C IV	2	2	6.78E-02	327.1811	Si IV	2	2	2.79E-03	342.5332	S IV	4	4	1.16E-02
312.606	Na VI	3	3	1.23E-01	327.2441	Ne II	4	2	7.04E-03	342.817	Ca VII	5	5	1.69E-01
313.0580	Ne III	5	3	5.46E-02	327.2605	Ne II	4	4	3.51E-02	342.9146	S IV	4	2	2.31E-03
313.5385	Ne II	4	4	1.38E-03	327.3511	Ne II	2	4	3.93E-02	343.194	Ca V	3	3	2.80E-01
313.6897	Ne III	3	3	5.45E-02	327.6210	Ne II	2	2	2.38E-02	343.564	Ca VII	5	3	1.12E-02
313.745	Na VI	5	3	1.23E-01	328.0819	Ne II	2	2	2.81E-02	343.9331	Ca IV	2	4	2.07E-01
313.754	Mg VIII	2	2	1.37E-01	328.0984	Ne II	2	4	1.41E-02	344.223	Ca V	1	3	2.80E-01
313.9637	Ne III	1	3	5.45E-02	328.20	Al VIII	5	3	2.10E-02	344.760	Ca XVIII	2	2	2.36E-02
314.3075	Ne II	2	4	5.50E-04	328.20	Al VIII	5	5	6.30E-02	344.951	Si IX	3	3	1.74E-02
314.33	Si VIII	4	2	2.99E-02	328.4717	Ne II	4	2	7.95E-04	344.9577	Ca IV	2	2	4.46E-01
314.4652	Ne II	4	6	1.40E-02	328.9752	Ne II	4	4	3.97E-03	345.124	Si IX	3	5	5.24E-02
314.7151	N III	2	4	1.94E-01	329.1090	Ca IV	4	4	8.20E-02	345.723	Fe X	4	2	2.86E-02
314.8564	N III	4	6	1.74E-01	329.3158	Ne II	2	2	3.17E-03	346.852	Fe XII	4	2	1.78E-02
314.8879	N III	4	4	1.93E-02	329.3802	Ca IV	4	2	1.23E-01	347.029	Ca VII	1	3	4.64E-01
315.039	Mg VIII	4	4	1.69E-01	329.6655	S IV	2	4	1.95E-02	347.40	Si X	2	4	6.62E-02
315.2188	F III	4	6	6.76E-02	329.7741	Ne II	4	4	9.29E-03	347.972	Ca VII	3	1	1.54E-01
315.5361	F III	4	4	4.50E-02	329.8219	Ne II	2	4	1.58E-03	348.183	Fe XIII	1	3	5.33E-02
315.7465	F III	4	2	2.25E-02	330.2163	Ne II	4	2	1.85E-03	348.7892	F II	5	3	5.57E-03
316.21	Si VIII	4	4	5.94E-02	330.5472	S IV	4	6	1.76E-02	348.7951	F II	5	5	1.68E-02
317.039	Mg VIII	4	2	3.37E-02	330.6249	Ne II	2	4	3.71E-03	348.997	Ca VII	3	3	1.16E-01
318.4521	Ne II	4	2	5.02E-04	330.6595	Ne II	4	4	4.22E-03	349.046	Fe XI	3	1	2.08E-02
318.8245	Ne II	4	4	2.51E-03	330.7027	S IV	4	4	1.95E-03	349.2011	F II	3	1	7.42E-03
319.0550	Ne II	4	4	9.17E-03	330.7887	Ne II	4	6	3.80E-02	349.2045	F II	3	3	5.57E-03
319.2455	Ne II	2	2	2.00E-03	331.0694	Ne II	2	2	7.40E-03	349.2104	F II	3	5	9.29E-03
319.3475	Ne II	4	6	2.59E-02	331.4350	Ca IV	4	4	6.11E-01	349.3862	F II	1	3	2.22E-02
319.4825	Ne II	4	2	1.83E-03	331.5149	Ne II	2	4	4.21E-02	349.617	Si IX	5	3	6.90E-04
319.6197	Ne II	2	4	1.00E-03	331.9845	Ca IV	4	6	7.32E-01	349.6391	Ar III	5	5	4.97E-03
319.83	Si VIII	4	6	8.82E-02	332.1048	S IV	2	4	1.50E-03	349.7947	Ar III	5	3	1.66E-03
319.8460	Ca IV	4	4	1.58E-01	332.1348	N III	2	2	6.14E-03	349.795	Si IX	5	5	1.03E-02
319.8514	Ne II	2	4	3.66E-03	332.3273	N III	4	2	6.14E-03	349.873	Si IX	5	7	5.79E-02
319.9245	Ne II	4	4	2.87E-03	332.5213	Ca IV	2	4	8.12E-01	350.645	Na VII	2	4	7.54E-02
319.9820	Ca IV	4	6	1.41E+00	332.6404	S IV	4	6	1.35E-03	351.0039	Ar III	3	5	2.75E-03
320.2809	Ne II	2	2	7.31E-03	332.79	Al X	1	3	2.87E-01	351.0887	Mg V	5	3	3.96E-02
320.7251	Ne II	2	4	2.87E-02	332.7982	Ca IV	2	2	4.87E-01	351.1607	Ar III	3	3	1.65E-03
320.803	Fe XIII	5	5	4.60E-02	333.1575	S IV	4	4	1.49E-04	351.2234	Ar III	3	1	2.20E-03
320.994	Mg IV	4	2	8.71E-02	333.852	Ca V	5	3	4.05E-03	351.371	Ca VII	3	5	1.91E-01
321.0267	S IV	2	2	8.89E-03	334.171	Fe XIV	2	4	7.09E-02	351.7265	Ar III	1	3	6.58E-03
321.455	Fe XIII	5	3	1.53E-02	334.8960	Ca IV	2	4	2.42E-01	351.9658	Ar III	5	3	7.23E-04
321.602	Ca V	5	3	1.17E-04	335.253	Mg VIII	2	2	4.10E-02	351.9899	Ar III	5	5	1.08E-02
322.0102	S IV	4	2	8.86E-03	335.330	Ca V	5	5	1.21E-02	352.003	Ca VII	5	3	1.15E-01
322.5741	C III	1	3	4.52E-02	335.357	Ca V	3	1	5.37E-03	352.106	Fe XII	4	4	3.50E-02



**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
352.15	Al VII	4	2	3.17E-02	361.9708	Fe V	7	7	2.20E-03	371.7263	Ar III	5	5	8.95E-03
352.2009	Mg V	3	1	5.27E-02	362.3765	Fe V	7	5	1.26E-03	371.7425	Ar III	5	7	5.02E-02
352.2086	Ar III	5	7	6.07E-02	362.4544	Ne II	2	2	9.78E-03	371.7736	Ar III	5	3	5.97E-04
352.2436	Ne II	4	2	2.52E-03	362.6004	Fe V	9	7	7.33E-04	372.025	Fe XIII	5	5	7.49E-03
352.275	Na VII	2	2	1.50E-01	363.4426	Fe V	1	3	4.39E-03	372.0751	Na II	1	3	2.18E-01
352.662	Fe XI	5	5	4.65E-02	363.6304	Fe V	3	3	3.65E-04	372.240	Fe XIII	5	3	4.99E-04
352.9549	Ne II	4	4	1.25E-02	363.773	Mg VII	1	3	9.20E-02	373.2693	Ar III	3	5	4.46E-02
353.0920	Mg V	5	5	1.18E-01	363.9947	Fe V	5	3	1.54E-03	373.3171	Ar III	3	3	1.49E-02
353.2145	Ne II	2	2	1.00E-02	364.1512	Fe V	3	1	1.46E-03	373.8027	O III	3	5	3.47E-02
353.294	Na VII	4	4	1.88E-01	364.2815	Fe V	5	7	5.14E-03	373.9566	Ar III	1	3	5.93E-02
353.3005	Mg V	3	3	3.94E-02	364.467	Fe XII	4	6	5.07E-02	374.0036	O III	1	3	8.31E-02
353.3489	Ar III	3	3	1.80E-02	364.7942	Fe V	7	7	2.56E-02	374.0725	O III	5	5	6.23E-02
353.3731	Ar III	3	5	5.40E-02	364.9108	N II	1	3	1.03E-03	374.1620	O III	3	3	2.08E-02
353.4231	F II	5	5	2.15E-02	364.9715	Fe V	3	5	1.92E-02	374.1977	N III	2	4	4.41E-01
353.4661	F II	5	3	7.16E-03	364.9756	N II	3	3	1.03E-03	374.3278	O III	3	1	2.76E-02
353.77	Al VII	4	4	6.31E-02	365.0850	N II	5	3	1.03E-03	374.4324	O III	5	3	2.07E-02
353.833	Fe XIV	4	6	6.03E-02	365.177	Mg VII	3	1	3.05E-02	374.4342	N III	4	6	3.97E-01
353.8496	F II	3	5	1.19E-02	365.234	Mg VII	3	5	3.82E-02	374.4421	N III	4	4	4.41E-02
353.8927	F II	3	3	7.15E-03	365.243	Mg VII	3	3	2.29E-02	374.5722	O II	4	6	7.04E-04
353.9131	F II	3	1	9.52E-03	365.3384	Fe V	5	5	4.48E-02	374.7367	Ca IV	2	4	2.12E-02
353.92	Ar XVI	2	4	5.79E-02	365.4336	Fe V	9	7	7.69E-02	374.8098	O II	4	4	4.69E-04
353.9218	Ar III	1	3	7.18E-02	365.4395	Fe V	1	3	7.69E-02	374.9559	O II	4	2	2.35E-04
353.9297	Ne II	2	4	5.01E-03	365.543	Fe X	2	2	2.71E-02	375.2363	F II	5	3	1.72E-02
354.0793	F II	1	3	2.86E-02	365.6294	Fe V	3	3	5.76E-02	375.2995	F II	5	5	5.16E-02
354.163	Ca VIII	2	4	7.68E-01	365.8541	Fe V	7	5	5.12E-02	375.4309	F II	5	3	2.31E-02
354.2249	Mg V	1	3	1.57E-01	365.9976	Fe V	5	3	2.69E-02	375.6921	F II	3	1	2.29E-02
354.418	Ca VII	5	5	3.42E-01	367.3043	Ar III	5	7	1.79E-02	375.7170	F II	3	3	1.72E-02
354.4814	Ar III	5	5	8.76E-03	367.3929	Ar III	5	5	3.20E-03	375.7804	F II	3	5	2.86E-02
354.6056	Ar III	5	3	2.92E-03	367.4744	Ar III	5	3	2.14E-04	375.9122	F II	3	3	2.30E-02
354.950	Na VII	4	2	3.72E-02	367.5530	Ar III	5	3	1.28E-02	375.9274	F II	1	3	6.87E-02
354.9620	Ne II	4	4	3.27E-02	367.674	Mg VII	5	5	6.83E-02	376.1227	F II	1	3	2.30E-02
355.3292	Mg V	3	5	6.53E-02	367.684	Mg VII	5	3	2.27E-02	376.3305	B III	2	4	1.50E-02
355.4512	Ne II	4	2	6.54E-03	368.071	Mg IX	1	3	3.14E-01	376.3335	B III	2	2	7.51E-03
355.8843	Ar III	3	5	4.84E-03	368.0883	Ar III	5	3	1.85E-02	376.6243	F II	5	3	5.12E-04
355.9480	Ne II	2	4	1.31E-02	368.122	Fe XIII	5	7	4.24E-02	376.6501	F II	5	5	7.69E-03
356.0095	Ar III	3	3	2.90E-03	368.3101	Ar III	5	5	5.55E-02	376.6871	F II	5	7	4.30E-02
356.01	Si X	4	6	5.81E-02	368.9002	Ar III	3	5	1.59E-02	376.6930	O II	4	4	2.90E-02
356.05	Si X	4	4	6.46E-03	368.9752	S IV	2	2	1.59E-02	376.7450	O II	4	6	4.36E-02
356.0800	Ar III	3	1	3.87E-03	368.9823	Ar III	3	3	5.31E-03	376.8500	F II	5	3	1.18E-03
356.4399	Ne II	2	2	2.61E-02	369.0615	Ar III	3	3	1.27E-02	377.1086	F II	3	3	1.28E-02
356.519	Fe XI	3	3	1.53E-02	369.153	Fe XI	3	5	2.47E-02	377.1345	F II	3	5	3.84E-02
356.5398	Ne II	4	4	1.11E-02	369.5708	Ar III	3	1	2.46E-02	377.3205	F II	1	3	5.11E-02
356.5911	Ar III	1	3	1.16E-02	369.6013	Ar III	3	3	1.84E-02	377.3349	F II	3	3	1.18E-03
356.639	Fe XIV	4	4	6.64E-03	369.6070	Ar III	1	3	2.12E-02	377.5470	F II	1	3	1.18E-03
356.8001	Ne II	4	6	9.94E-02	369.6450	Ca IV	4	6	1.94E-02	378.1362	Na III	4	2	8.89E-02
356.89	Al VII	4	6	9.39E-02	369.6866	Ar III	1	3	1.27E-02	378.21	Na VII	2	2	4.53E-02
357.5346	Ne II	2	4	1.10E-01	369.8249	Ar III	3	5	3.07E-02	378.6765	F II	5	3	8.68E-05
357.955	Ne V	1	3	1.39E-01	369.8584	F II	5	3	1.31E-03	378.6798	F II	5	5	1.30E-03
357.9692	Ca III	1	3	3.83E+00	370.2281	Ar III	1	3	7.36E-02	378.6837	F II	5	7	7.29E-03
358.486	Ne V	3	3	1.39E-01	370.2751	S IV	4	2	1.60E-02	379.1661	F II	3	3	2.17E-03
358.621	Fe XI	1	3	6.09E-02	370.3254	F II	3	3	1.31E-03	379.1694	F II	3	5	6.50E-03
359.365	Ca VIII	4	6	6.82E-01	370.4086	Ca IV	4	4	2.15E-03	379.3803	F II	1	3	8.66E-03
359.385	Ne V	5	3	1.38E-01	370.5298	F II	1	3	1.31E-03	380.0999	Na III	2	2	8.84E-02
359.638	Fe XIII	3	5	3.88E-02	370.7319	F II	5	3	2.61E-04	381.2	Al VIII	1	3	7.49E-02
359.651	Ca VIII	4	4	7.56E-02	370.7330	F II	5	5	3.92E-03	381.30	Na VII	4	2	4.49E-02
359.838	Fe XIII	3	3	1.29E-02	370.7360	F II	5	7	2.19E-02	383.70	Al VIII	3	3	1.86E-02
360.6558	Fe V	7	9	9.47E-04	370.9562	F II	5	3	6.47E-05	383.79	Al VIII	3	5	5.58E-02
360.761	Fe XVI	2	2	1.22E-01	370.9695	F II	5	5	9.70E-04	384.9573	Fe V	9	11	7.10E-02
361.2808	Fe V	9	9	3.67E-03	370.9901	F II	5	7	5.43E-03	384.97	Al IX	2	4	7.08E-02
361.4321	Ne II	4	2	9.80E-03	371.2012	F II	3	3	6.52E-03	385.0331	Fe V	7	9	6.22E-02
361.4660	Fe V	5	7	1.76E-03	371.2023	F II	3	5	1.96E-02	385.3009	Fe V	5	7	5.57E-02
361.5106	Fe V	3	5	2.57E-03	371.4065	F II	1	3	2.60E-02	385.4622	N II	1	3	2.00E-03
361.5603	Si IV	2	4	1.08E-02	371.4260	F II	3	3	1.62E-03	385.5345	N II	3	3	2.00E-03
361.6589	Si IV	2	2	5.37E-03	371.4394	F II	3	5	4.84E-03	385.6567	N II	5	3	2.00E-03
361.8706	Fe V	5	5	1.10E-03	371.6315	F II	1	3	6.46E-03	385.7456	Fe V	9	9	9.66E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
385.7519	Fe V	3	5	5.41E-02	407.7630	Ca VII	1	3	2.70E-01	429.8428	N II	5	5	1.38E-03
385.8745	Fe V	7	7	1.74E-02	408.3775	Si III	1	3	2.86E-03	429.8964	N II	5	3	4.58E-04
386.1618	Fe V	5	5	2.32E-02	408.6844	Na IV	5	3	4.19E-02	429.9180	O II	4	2	6.18E-02
386.2028	C III	1	3	2.32E-01	409.6136	Na IV	3	1	5.58E-02	430.0410	O II	4	4	1.24E-01
386.2622	Fe V	1	3	1.73E-01	410.3711	Na IV	5	5	1.26E-01	430.1765	O II	4	6	1.86E-01
386.4743	Fe V	3	3	1.44E-02	410.4827	Ca VII	3	3	2.68E-01	430.465	Mg VIII	2	4	7.63E-02
386.5901	Fe V	9	7	6.42E-04	410.5405	Na IV	3	3	4.17E-02	430.4837	N II	3	5	2.13E-04
386.7380	Fe V	7	5	1.65E-03	411.171	Na VIII	1	3	3.48E-01	430.6360	N II	5	5	3.83E-04
386.7848	Fe V	7	9	3.70E-02	411.3337	Na IV	1	3	1.67E-01	430.9113	F II	5	7	8.18E-02
386.8810	Fe V	3	1	5.75E-02	411.8043	B III	2	4	3.31E-02	430.9153	F II	5	5	1.46E-02
386.8858	Fe V	5	3	6.05E-02	411.8113	B III	2	2	1.66E-02	430.9168	F II	5	3	9.74E-04
387.2026	Fe V	5	7	6.90E-02	412.2426	Na IV	3	5	6.94E-02	431.189	Mg VII	3	3	1.99E-02
387.5038	Fe V	9	9	1.43E-01	414.351	Na VI	1	3	1.00E-01	431.2421	N II	1	3	1.24E-02
387.6173	Fe V	3	5	1.01E-01	414.6468	Ca VII	5	3	2.65E-01	431.3129	N II	3	5	5.20E-03
387.6493	O II	4	6	1.89E-03	415.553	Na VI	3	1	3.32E-02	431.313	Mg VII	3	5	5.97E-02
387.73	Al VIII	5	3	7.37E-04	415.553	Na VI	3	5	4.15E-02	431.3326	N II	3	1	4.16E-03
387.7819	Fe V	7	7	8.62E-02	415.553	Na VI	3	3	2.50E-02	431.3326	N II	3	3	3.11E-03
387.82	Al VIII	5	5	1.10E-02	417.568	Na VI	5	3	2.49E-02	431.4025	N II	5	7	7.17E-03
387.8977	O II	4	4	1.26E-03	417.568	Na VI	5	5	7.45E-02	431.4486	N II	1	3	8.53E-03
387.96	Al VIII	5	7	6.18E-02	417.660	S XIV	2	4	6.39E-02	431.4658	N II	5	5	9.34E-03
388.0313	Fe V	5	5	4.30E-02	418.5958	O II	4	6	7.34E-03	431.4855	N II	5	3	3.11E-03
388.0545	O II	4	2	6.32E-04	418.8786	O II	4	4	4.89E-03	431.5393	N II	3	3	2.14E-03
388.5046	Fe V	9	7	2.87E-02	419.0633	O II	4	2	2.44E-03	431.5494	F II	3	5	7.29E-02
388.6130	Fe V	7	5	4.91E-02	419.6440	F IV	1	3	1.58E-01	431.5510	F II	3	3	2.43E-02
389.14	Ar XVI	2	2	2.63E-02	420.0410	F IV	3	3	1.58E-01	431.6516	N II	3	5	6.40E-03
390.2249	F II	5	3	3.79E-03	420.7270	F IV	5	3	1.58E-01	431.6923	N II	5	3	8.54E-05
390.7449	F II	3	3	3.78E-03	422.0107	F II	5	3	1.06E-02	431.8047	N II	5	5	1.28E-03
390.9724	F II	1	3	3.78E-03	422.6188	F II	3	3	1.06E-02	431.8285	F II	1	3	9.71E-02
391.5491	S IV	2	4	5.15E-05	422.8850	F II	1	3	1.06E-02	432.8699	Ca VIII	2	2	3.82E-01
391.9062	O II	4	2	2.73E-02	423.8166	Si III	1	3	1.81E-03	433.176	Ne VI	2	2	5.05E-02
391.9380	O II	4	4	5.47E-02	426.4018	N II	1	3	1.72E-03	434.5568	Ca IV	4	6	6.09E-03
391.9954	O II	4	6	8.21E-02	426.4903	N II	3	3	4.31E-04	434.594	Mg VII	5	3	7.91E-04
392.36	Al IX	4	4	6.94E-03	426.5403	N II	3	5	7.18E-04	434.6710	N II	1	3	5.62E-03
392.40	Al IX	4	6	6.25E-02	426.6302	N II	3	5	3.84E-03	434.7168	N II	3	5	4.22E-03
393.0063	S IV	4	6	4.62E-05	426.6397	N II	5	3	4.31E-04	434.720	Mg VII	5	5	1.19E-02
393.0132	S IV	4	4	5.13E-06	426.6437	Si III	1	3	4.15E-04	434.7629	N II	3	3	1.41E-03
393.6752	F II	5	7	3.22E-02	426.6898	N II	5	5	1.29E-03	434.7925	N II	5	7	4.72E-03
393.6769	F II	5	5	5.75E-03	426.7736	N II	5	7	4.30E-03	434.8721	N II	5	5	8.43E-04
393.6778	F II	5	3	3.83E-04	426.7797	N II	5	5	7.67E-04	434.917	Mg VII	5	7	6.64E-02
394.2061	F II	3	5	2.87E-02	426.8109	N II	1	3	5.12E-03	434.9182	N II	5	3	5.62E-05
394.2070	F II	3	3	9.56E-03	426.8996	N II	3	3	1.28E-03	435.3035	N II	1	3	1.07E-02
394.4385	F II	1	3	3.82E-02	427.0493	N II	5	3	5.11E-05	435.3957	N II	3	1	3.56E-03
395.9206	Ar III	5	3	2.38E-02	427.7926	N II	3	5	2.72E-04	435.3957	N II	3	3	2.67E-03
396.3640	Ar III	5	7	1.39E-01	427.9430	N II	5	5	4.89E-04	435.4119	N II	3	5	4.45E-03
396.3961	Ar III	5	3	1.66E-03	427.9781	N II	1	3	6.51E-04	435.5515	N II	5	3	2.67E-03
396.4263	Ar III	5	5	2.48E-02	428.0673	N II	3	3	1.63E-04	435.5677	N II	5	5	8.00E-03
396.8782	Ar IV	4	6	6.13E-02	428.0954	Ca VIII	2	4	1.94E-01	435.6315	F II	5	3	8.80E-03
397.6716	Ar III	3	3	2.37E-02	428.2178	N II	5	3	1.63E-04	435.6347	F II	5	5	2.64E-02
398.1513	Ar III	3	3	4.12E-02	428.3429	N II	1	3	1.97E-03	435.648	Ne VI	4	2	5.03E-02
398.1818	Ar III	3	5	1.24E-01	428.4260	N II	3	5	8.20E-04	436.1063	N II	1	3	3.82E-02
398.3974	Ar III	1	3	2.36E-02	428.4323	N II	3	1	6.55E-04	436.1394	Ca VIII	4	4	4.74E-01
398.5629	Ar IV	4	4	4.07E-02	428.4323	N II	3	3	4.92E-04	436.1529	N II	3	5	2.87E-02
398.8788	Ar III	1	3	1.65E-01	428.5742	N II	3	5	5.05E-03	436.1989	N II	3	3	9.56E-03
399.281	Mg VI	4	2	3.41E-02	428.5768	N II	5	5	1.48E-03	436.2248	N II	5	7	3.21E-02
399.6569	Ar IV	4	2	2.03E-02	428.5831	N II	5	3	4.92E-04	436.2746	F II	3	1	1.17E-02
399.821	Ne VI	2	4	8.44E-02	428.6916	N II	5	7	5.65E-03	436.2796	F II	3	3	8.79E-03
400.667	Mg VI	4	4	6.78E-02	428.7012	N II	1	3	6.72E-03	436.2828	F II	3	5	1.47E-02
401.136	Ne VI	2	2	1.68E-01	428.7251	N II	5	5	1.01E-03	436.3092	N II	5	5	5.74E-03
401.926	Ne VI	4	4	2.10E-01	428.7907	N II	3	3	1.68E-03	436.3552	N II	5	3	3.82E-04
403.255	Ne VI	4	2	4.18E-02	428.9417	N II	5	3	6.72E-05	436.5632	F II	1	3	3.51E-02
403.310	Mg VI	4	6	1.01E-01	429.140	Mg VII	1	3	8.00E-02	436.672	Mg VIII	4	4	7.52E-03
403.7201	Ca III	1	3	7.00E-01	429.6548	N II	1	3	1.83E-03	436.735	Mg VIII	4	6	6.77E-02
405.8483	Ne II	4	4	6.52E-03	429.6911	N II	3	5	7.65E-04	437.2545	Si III	1	3	4.83E-03
405.8538	Ne II	4	6	5.87E-02	429.7446	N II	3	1	6.11E-04	437.7578	Ca IV	4	4	6.72E-04
407.1377	Ne II	2	4	6.50E-02	429.7446	N II	3	3	4.58E-04	438.7741	C II	2	4	1.28E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
438.8251	C II	2	2	2.57E-03	456.1633	Fe III	7	5	9.58E-05	473.9224	Ar III	5	5	2.69E-01
438.8962	C II	4	4	3.22E-03	456.3495	Fe III	7	7	1.00E-03	474.4931	N II	1	3	4.36E-02
438.9473	C II	4	2	6.43E-04	456.5456	Fe III	7	9	3.59E-03	474.5463	N II	3	1	1.45E-02
439.4419	N II	3	5	2.80E-04	456.6116	Fe III	5	3	1.34E-04	474.6027	N II	3	3	1.09E-02
439.6006	N II	5	5	5.03E-04	456.7941	Fe III	5	5	1.34E-03	474.7067	N II	3	5	1.81E-02
439.6128	N II	1	3	6.70E-04	456.9809	Fe III	5	7	3.21E-03	474.7877	N II	5	3	1.09E-02
439.7069	N II	3	3	1.68E-04	456.9816	Ca IV	2	4	2.89E-04	474.8919	N II	5	5	3.26E-02
439.7666	N II	3	1	2.24E-04	457.0155	Fe III	3	3	1.56E-03	475.1616	Ar III	3	3	4.47E-01
439.8658	N II	5	3	1.68E-04	457.1983	Fe III	3	5	3.12E-03	475.2839	S III	3	5	1.13E-02
441.0960	Ca VIII	4	2	9.37E-02	457.2138	Fe III	1	3	4.68E-03	475.6477	N II	1	3	1.19E-01
441.6097	N II	1	3	1.36E-02	457.4712	Ar VI	2	4	9.42E-01	475.6985	N II	3	5	8.91E-02
441.6771	N II	3	1	4.52E-03	457.8154	Si IV	2	4	2.36E-02	475.7040	Ar III	5	7	1.50E+00
441.7046	N II	3	3	3.39E-03	458.115	Ar V	1	3	5.79E-01	475.7579	N II	3	3	2.96E-02
441.7624	N II	3	5	5.65E-03	458.1548	Si IV	2	2	1.18E-02	475.8038	N II	5	7	9.97E-02
441.8649	N II	5	3	3.39E-03	458.971	Ar V	3	1	1.93E-01	475.8845	N II	5	5	1.78E-02
441.9227	N II	5	5	1.02E-02	459.722	Ar V	3	3	1.45E-01	475.9056	Ar II	4	6	1.06E-01
442.0279	N II	3	5	3.46E-02	459.897	Na V	4	2	3.64E-02	475.9438	N II	5	3	1.19E-03
442.0562	N II	1	3	4.61E-02	460.7284	Ne II	4	2	8.57E-02	476.1981	Ar III	1	3	1.79E+00
442.1334	N II	5	7	3.87E-02	461.050	Na V	4	4	7.27E-02	476.3551	S III	1	3	2.70E-02
442.1513	N II	3	3	1.15E-02	461.0947	Ca IV	2	2	5.73E-04	476.4335	Ar III	3	5	1.34E+00
442.1885	N II	5	5	6.91E-03	461.223	Ar V	3	5	2.40E-01	476.4942	S III	5	5	2.02E-02
442.3119	N II	5	3	4.60E-04	461.7127	Ca VIII	2	2	7.66E-02	477.0338	S III	3	3	6.74E-03
443.8158	Ca IV	2	4	6.62E-03	462.0096	Ar VI	4	6	8.40E-01	477.1049	Ar II	4	4	5.31E-02
445.0393	Ne II	4	2	1.95E-02	462.1373	Ar VI	4	4	9.33E-02	477.3812	S III	3	1	8.98E-03
445.700	S XIV	2	2	2.99E-02	462.3908	Ne II	2	2	8.54E-02	477.5241	Ar II	4	4	1.17E-02
445.999	Ar V	1	3	1.40E+00	462.413	Ar V	5	3	1.44E-01	478.2530	S III	5	3	6.72E-03
446.2552	Ne II	4	4	9.74E-02	463.263	Na V	4	6	1.09E-01	479.0056	Ar II	4	2	1.47E-03
446.5902	Ne II	2	2	7.78E-02	463.932	Ar V	5	5	4.29E-01	480.1925	Ar II	4	4	7.33E-03
446.944	Ar V	3	5	1.05E+00	464.365	F V	2	4	9.63E-02	480.3860	Ar II	2	4	2.10E-02
447.522	Ar V	3	3	3.48E-01	464.9740	Ar II	4	2	9.72E-03	480.407	Ne V	1	3	1.10E-01
447.8146	Ne II	2	4	3.89E-02	465.220	Ne VII	1	3	3.89E-01	480.5269	S III	1	3	1.79E-02
448.2921	N II	1	3	2.57E-03	465.374	F V	2	2	1.92E-01	480.8110	Ar II	2	4	1.17E-01
448.3900	N II	3	3	2.57E-03	465.8367	Ar II	4	6	1.01E-02	480.9698	S III	3	1	5.95E-03
448.5552	N II	5	3	2.57E-03	465.979	F V	4	4	2.40E-01	481.2176	S III	3	3	4.46E-03
448.7736	N II	3	5	6.57E-04	466.1306	Si III	1	3	1.41E-02	481.281	Ne V	3	1	3.66E-02
448.9390	N II	5	5	1.18E-03	466.240	Ca IX	1	3	1.09E+00	481.364	Ne V	3	5	4.57E-02
448.9460	N II	1	3	1.58E-03	466.3528	C II	2	4	2.97E-03	481.364	Ne V	3	3	2.74E-02
449.0441	N II	3	3	3.94E-04	466.4085	C II	2	2	5.92E-03	481.7088	S III	3	5	7.42E-03
449.059	Ar V	5	7	1.17E+00	466.4907	C II	4	4	7.40E-03	481.8536	Ar III	5	3	2.26E-01
449.1228	N II	3	1	5.25E-04	466.5272	Ar III	5	3	8.91E-02	482.3130	Ar II	2	2	5.84E-03
449.2097	N II	5	3	3.93E-04	466.5465	C II	4	2	1.48E-03	482.4550	Fe III	9	11	3.23E-02
449.487	Ar V	5	5	2.08E-01	466.5588	N II	3	5	1.52E-03	482.4583	S III	5	3	4.45E-03
450.072	Ar V	5	3	1.38E-02	466.7281	N II	1	3	3.64E-03	482.4667	Fe III	9	9	4.40E-03
450.5615	Ca IV	4	4	7.32E-04	466.7376	N II	5	5	2.73E-03	482.4788	Fe III	9	7	2.93E-04
451.2090	Ar IV	4	2	5.21E-01	466.8342	N II	3	3	9.10E-04	482.5452	Ar III	5	5	6.75E-01
451.8708	N III	2	2	3.16E-02	466.9339	N II	3	1	1.21E-03	482.9520	S III	5	5	1.33E-02
451.8745	Ar IV	4	4	1.04E+00	466.995	F V	4	2	4.78E-02	482.987	Ne V	5	3	2.73E-02
452.2272	N III	4	2	3.16E-02	467.0132	N II	5	3	9.09E-04	482.987	Ne V	5	5	8.19E-02
452.6394	N II	1	3	2.22E-02	467.3918	Ar III	5	5	2.67E-01	483.4832	Fe III	7	9	2.82E-02
452.6964	N II	3	1	7.41E-03	468.0899	Ar II	2	2	9.65E-03	483.4954	Fe III	7	7	7.92E-03
452.7391	N II	3	3	5.56E-03	468.4782	Ar III	3	1	1.18E-01	483.5076	Fe III	7	5	7.53E-04
452.8161	N II	3	5	9.25E-03	468.9603	Ar III	3	3	8.86E-02	483.5164	Ar II	2	4	2.92E-03
452.9076	N II	5	3	5.55E-03	469.6299	Ar II	4	6	1.93E-02	484.1125	Ar III	3	1	2.98E-01
452.9271	Ar IV	4	6	1.56E+00	469.6327	Ar II	4	4	2.14E-03	484.1668	S III	1	3	5.78E-02
452.9846	N II	5	5	1.67E-02	469.8339	Ar III	3	5	1.48E-01	484.2042	Fe III	5	7	2.53E-02
453.2276	N II	1	3	6.24E-02	469.9699	Ar III	1	3	3.54E-01	484.2164	Fe III	5	5	1.05E-02
453.2569	N II	3	5	4.68E-02	471.0835	Ca VIII	4	2	7.51E-02	484.2288	Fe III	5	3	1.05E-03
453.3276	N II	3	3	1.56E-02	471.9201	F II	5	3	6.97E-04	484.4497	Ar III	3	3	2.24E-01
453.3451	N II	5	7	5.25E-02	471.9492	F II	5	5	1.04E-02	484.5562	S III	3	5	4.34E-02
453.4257	N II	5	5	9.36E-03	471.9962	F II	5	7	5.86E-02	484.6705	Fe III	3	5	2.46E-02
453.4964	N II	5	3	6.25E-04	472.6639	Ar III	5	3	1.80E-02	484.6830	Fe III	3	3	1.23E-02
454.5593	Ca IV	4	2	1.45E-04	472.6808	F II	3	3	1.75E-02	484.8680	S III	3	3	1.44E-02
455.4438	Fe III	9	7	3.73E-05	472.7100	F II	3	5	5.23E-02	484.9061	Fe III	1	3	3.68E-02
455.6391	Fe III	9	9	5.60E-04	472.8115	Ar II	2	4	2.13E-02	485.1487	Ar III	3	5	3.72E-01
455.7561	Fe III	9	11	4.11E-03	473.0137	F II	1	3	6.96E-02	485.2495	S III	5	7	4.85E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
485.5272	Ar III	1	3	8.93E-01	497.1010	Fe III	9	7	1.57E-04	518.9089	Ar II	4	4	3.83E-02
485.8142	S III	5	5	8.65E-03	498.0787	Fe III	7	9	2.01E-04	519.3270	Ar II	4	6	3.45E-01
486.0684	Fe III	9	7	1.14E-03	498.1803	Fe III	7	7	4.69E-04	520.665	Si XII	2	2	3.45E-02
486.1276	S III	5	3	5.76E-04	498.1856	Fe III	7	5	2.68E-04	522.092	Ar V	1	3	3.05E-01
486.2110	Fe III	9	9	5.70E-03	498.4454	Ar II	4	2	4.98E-04	522.2128	He I	1	3	3.07E-02
486.741	Na VII	2	4	8.29E-02	498.9038	Fe III	5	3	3.28E-04	522.7925	Ar II	2	4	3.80E-01
486.8839	Al III	2	4	1.78E-03	498.9328	Fe III	5	7	3.75E-04	524.181	Ar V	3	3	3.03E-01
486.9124	Al III	2	2	8.90E-04	498.9381	Fe III	5	5	2.34E-04	524.6804	Ar II	4	4	1.31E-01
487.0880	Fe III	7	5	1.95E-03	499.3859	Fe III	3	3	7.80E-05	525.6881	Fe IV	6	8	1.83E-01
487.1002	Fe III	7	7	3.42E-03	499.4056	Fe III	3	1	3.12E-04	526.2929	Fe IV	6	6	1.38E-01
487.2272	Ar II	4	2	9.32E-02	499.406	Si XII	2	4	7.19E-02	526.4969	Ar II	4	2	2.60E-02
487.2435	Fe III	7	9	1.47E-03	499.4203	Fe III	3	5	5.46E-04	526.6342	Fe IV	6	4	9.14E-02
487.2783	Ar II	4	4	9.53E-02	499.6228	Fe III	1	3	9.36E-04	527.683	Ar V	5	3	3.01E-01
487.3410	Fe III	9	11	2.91E-05	499.9193	Ar II	4	4	2.49E-03	528.0375	Ar III	5	5	2.72E-03
487.5848	Fe III	9	9	3.97E-06	500.0449	Ar II	4	4	3.25E-04	528.6512	Ar II	2	4	5.20E-02
487.7990	Fe III	9	7	2.64E-07	500.8017	Ar II	4	6	2.93E-03	529.3555	N II	1	3	1.03E-01
487.8074	Fe III	5	5	1.71E-03	501.1897	Ar II	4	4	2.90E-02	529.4132	N II	3	1	3.43E-02
487.8196	Fe III	5	7	2.73E-03	501.3873	Ar II	4	2	5.80E-03	529.4919	N II	3	3	2.57E-02
487.9107	Fe III	5	3	2.39E-03	501.8507	Fe III	9	7	1.07E-04	529.6372	N II	3	5	4.29E-02
488.1085	Ne III	5	3	4.38E-02	501.9760	Fe III	9	9	1.61E-03	529.7223	N II	5	3	2.57E-02
488.2683	Fe III	3	5	3.98E-03	502.0277	Ar II	2	2	1.97E-03	529.8677	N II	5	5	7.71E-02
488.3718	Fe III	3	3	5.68E-04	502.1599	Fe III	9	11	1.17E-02	529.8965	Ar III	5	7	2.66E-02
488.4530	Ar III	5	3	2.58E-01	502.8553	Fe III	7	5	2.74E-04	530.2754	C II	2	4	3.62E-02
488.5983	Fe III	1	3	6.81E-03	502.9507	Fe III	7	7	2.88E-03	530.3587	C II	4	6	3.25E-02
488.6231	Fe III	7	9	2.55E-05	503.0765	Fe III	7	9	1.03E-02	530.4489	Ar III	5	3	9.02E-04
488.7928	Ar II	4	6	1.80E-01	503.5229	Ar II	2	4	9.85E-04	530.4538	C II	4	4	3.62E-03
488.8382	Fe III	7	7	7.11E-06	503.5515	Fe III	5	3	3.85E-04	530.4954	Ar II	2	2	1.04E-01
488.8742	Ne III	3	1	5.82E-02	503.6220	Fe III	5	5	3.85E-03	531.1566	Ar III	3	5	1.50E-03
488.9616	Ar II	4	2	1.90E-02	503.6503	Ar II	2	4	3.23E-03	532.4100	Ar III	5	5	4.73E-03
488.9797	Fe III	7	5	6.78E-07	503.7177	Fe III	5	7	9.22E-03	533.5116	N II	1	3	2.99E-01
489.1954	Ar II	4	4	2.00E-02	504.0427	Fe III	3	3	4.47E-03	533.5818	N II	3	5	2.24E-01
489.5045	Ne III	5	5	1.31E-01	504.1133	Fe III	3	5	8.96E-03	533.5966	Ar III	3	3	8.96E-04
489.5627	Fe III	5	7	2.27E-05	504.2840	Fe III	1	3	1.35E-02	533.6501	N II	3	3	7.48E-02
489.570	Na VI	1	3	8.60E-02	504.8117	Ar II	2	4	1.15E-02	533.7293	N II	5	7	2.51E-01
489.6459	Ne III	3	3	4.36E-02	505.0121	Ar II	2	2	2.30E-02	533.8157	N II	5	5	4.48E-02
489.7047	Fe III	5	5	9.48E-06	506.163	F V	2	2	5.74E-02	533.8841	N II	5	3	2.99E-03
489.7913	Fe III	5	3	9.48E-07	507.0576	He I	1	3	1.88E-03	534.2643	Ar III	5	3	3.14E-04
490.1692	Fe III	3	5	2.20E-05	507.3883	O III	1	3	1.85E-01	534.6659	Ar III	3	1	1.19E-03
490.2560	Fe III	3	3	1.10E-05	507.6799	O III	3	3	1.85E-01	534.9041	Ar III	1	3	3.58E-03
490.3138	Ne III	1	3	1.75E-01	507.7178	He I	1	3	2.59E-03	535.206	F VI	1	3	4.43E-01
490.4843	Fe III	1	3	3.31E-05	508.081	F V	4	2	5.72E-02	535.5811	Ar III	3	5	2.35E-02
490.6495	Ar II	2	2	9.26E-02	508.1778	O III	5	3	1.85E-01	537.0296	He I	1	3	7.52E-02
490.7013	Ar II	2	4	3.79E-02	508.4347	Ar III	5	7	1.58E-01	537.4577	Ar III	3	3	7.80E-03
491.0508	Ne III	3	5	7.26E-02	508.4849	N II	3	5	4.35E-03	538.4075	C II	2	2	6.05E-04
491.1208	Ar III	3	3	2.57E-01	508.6044	Ar III	5	5	2.82E-02	538.5914	C II	4	2	6.04E-04
491.248	Na VI	3	3	2.14E-02	508.6431	He I	1	3	3.69E-03	538.7842	Ar III	1	3	3.11E-02
491.340	Na VI	3	5	6.43E-02	508.6680	Ar III	5	3	1.88E-03	539.0861	O II	4	6	6.52E-02
491.862	Na VII	4	4	8.21E-03	508.6680	N II	1	3	1.05E-02	539.3950	Ca VII	1	3	6.65E-02
491.949	Na VII	4	6	7.38E-02	508.6974	N II	5	5	7.84E-03	539.5473	O II	4	4	4.35E-02
492.2282	Ar III	1	3	2.56E-01	508.7940	N II	3	3	2.61E-03	539.8540	O II	4	2	2.17E-02
492.4084	Ar II	2	2	7.54E-02	508.9282	N II	3	1	3.48E-03	541.128	Ne IV	4	2	3.90E-02
492.6455	Ar II	2	4	1.99E-01	509.0067	N II	5	3	2.61E-03	541.1818	Fe III	9	11	5.68E-02
494.066	Na VI	5	3	8.52E-04	509.9979	He I	1	3	5.53E-03	541.1856	Fe III	9	9	7.75E-03
494.159	Na VI	5	5	1.27E-02	510.5509	Ar II	4	4	9.56E-04	541.1885	Fe III	9	7	5.17E-04
494.381	Na VI	5	7	7.15E-02	510.5564	Ar II	4	6	8.60E-03	542.073	Ne IV	4	4	7.79E-02
494.5586	Fe III	9	7	6.09E-03	511.1384	Al III	2	4	2.96E-03	542.4650	Fe III	7	9	4.96E-02
495.4251	Fe III	7	5	4.05E-03	511.1907	Al III	2	2	1.48E-03	542.4679	Fe III	7	7	1.39E-02
495.6268	Fe III	7	7	2.03E-03	511.4976	Ar III	3	5	1.40E-01	542.4706	Fe III	7	5	1.32E-03
496.0420	Fe III	5	3	2.13E-03	511.5619	Ar III	3	3	4.67E-02	543.2033	Ar II	4	2	1.30E-01
496.1693	Fe III	5	5	3.54E-03	512.0982	He I	1	3	8.83E-03	543.2580	C II	2	4	3.49E-02
496.3716	Fe III	5	7	4.05E-04	512.7635	Ar III	1	3	1.87E-01	543.3603	Fe III	5	7	4.44E-02
496.5186	Fe III	3	3	4.55E-03	514.3100	Ar II	2	4	9.49E-03	543.3629	Fe III	5	5	1.85E-02
496.6462	Fe III	3	5	1.52E-03	515.6166	He I	1	3	1.54E-02	543.3638	Fe III	5	3	1.85E-03
496.7528	Fe III	1	3	6.06E-03	518.2383	B III	2	4	1.02E-01	543.4432	C II	4	6	3.15E-02
496.9999	Fe III	9	9	7.84E-04	518.2652	B III	2	2	5.11E-02	543.4453	C II	4	4	3.49E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
543.7305	Ar II	4	2	8.11E-03	572.0137	Ar II	4	2	5.15E-02	630.7851	Ca VII	3	3	1.25E-02
543.892	Ne IV	4	6	1.16E-01	572.033	Ne V	5	3	9.22E-04	633.8441	Ca VI	4	4	3.18E-02
543.9349	Fe III	3	5	4.31E-02	572.105	Ne V	5	5	1.38E-02	635.9945	Ca II	2	2	6.14E-03
543.9358	Fe III	3	3	2.16E-02	572.338	Ne V	5	7	7.74E-02	636.2511	C II	4	2	6.13E-03
544.1072	Ca VII	3	5	2.75E-02	572.6439	F IV	5	3	3.04E-02	636.8246	Ar III	5	3	2.67E-05
544.1644	Ca VII	3	3	1.65E-02	572.6603	F IV	5	5	9.11E-02	637.2601	Ar III	5	5	4.00E-04
544.2168	Fe III	1	3	6.47E-02	573.3620	Ar II	4	4	2.57E-01	637.2853	Ar III	5	7	2.25E-03
544.2719	Ca VII	3	1	2.20E-02	574.010	Ca X	2	2	1.66E-01	637.9170	Ca V	5	3	1.39E-02
544.7332	Ar VI	2	4	2.18E-01	574.3888	S II	4	6	3.68E-03	639.1500	Ca VII	5	7	4.13E-02
546.1768	Ar II	4	4	4.04E-02	576.0509	S II	4	4	2.44E-03	640.4144	Ca VII	5	5	7.36E-03
546.8533	F II	5	3	5.55E-02	576.7365	Ar II	2	2	2.05E-01	640.4161	S II	4	2	8.68E-02
547.4606	Ar II	2	2	1.29E-01	576.8748	C II	2	2	2.34E-03	640.6720	Ca VII	5	3	4.90E-04
547.5408	B II	1	3	2.42E-02	576.9780	S II	4	2	1.22E-03	640.9043	S II	4	4	1.74E-01
547.8750	F II	3	3	5.54E-02	577.0859	C II	4	2	2.34E-03	641.3669	Ar III	3	3	6.64E-04
547.9961	Ar II	2	2	3.22E-02	578.1072	Ar II	2	4	1.02E-01	641.7715	S II	4	6	2.60E-01
548.3223	F II	1	3	5.54E-02	578.6044	Ar II	4	4	5.50E-02	641.8086	Ar III	3	5	1.99E-03
548.9044	Ar VI	2	2	4.33E-01	580.2632	Ar II	4	6	4.93E-01	641.9041	Ca VI	4	6	4.71E-02
549.3195	C II	2	4	6.06E-03	582.8450	Ca VIII	2	4	7.25E-02	643.1042	Ca V	3	1	1.83E-02
549.3785	C II	2	2	1.21E-02	583.4371	Ar II	2	4	5.45E-01	643.2568	Ar III	1	3	2.64E-03
549.5110	C II	4	4	1.51E-02	584.3340	He I	1	3	2.85E-01	644.6349	N II	1	3	2.24E-01
549.5700	C II	4	2	3.03E-03	585.754	Ar VII	1	3	1.24E+00	644.8372	N II	3	3	2.24E-01
550.031	Al XI	2	4	7.73E-02	586.1955	B II	1	3	5.14E-02	645.1789	N II	5	3	2.24E-01
550.4810	Ar II	2	4	1.60E-02	588.9153	Ar VI	2	2	8.73E-02	646.5344	Ca V	5	5	4.10E-02
551.1218	S IV	2	2	8.69E-02	593.5055	S II	4	2	2.76E-02	647.8551	Ca V	3	3	1.37E-02
551.3621	Ar VI	4	4	5.39E-01	593.8317	S II	4	4	5.52E-02	651.5312	Ca V	1	3	5.41E-02
551.4479	Ca VII	5	5	4.88E-02	594.0723	Fe III	9	7	1.09E-02	654.031	F V	2	4	9.99E-02
551.5066	Ca VII	5	3	1.63E-02	594.4699	S II	4	6	8.28E-02	655.9997	Ca IV	4	2	2.95E-02
551.6808	C II	2	2	1.12E-03	594.8000	C II	2	4	1.17E-01	656.1211	F III	4	2	4.18E-02
551.8739	C II	4	2	1.12E-03	595.0219	C II	4	6	1.06E-01	656.7450	Ca V	3	5	2.24E-02
553.3293	O IV	2	4	1.12E-01	595.0245	C II	4	4	1.17E-02	656.8688	F III	4	4	8.35E-02
553.4593	Ar III	5	3	1.22E-01	595.2906	Fe III	7	5	7.22E-03	657.237	F V	4	4	9.94E-03
554.0268	S IV	4	2	8.65E-02	595.6144	Fe III	7	7	3.61E-03	657.3187	S IV	2	4	1.18E+00
554.0756	O IV	2	2	2.24E-01	596.1650	Fe III	5	3	3.79E-03	657.333	F V	4	6	8.95E-02
554.5134	O IV	4	4	2.79E-01	596.3654	Fe III	5	5	6.31E-03	658.3291	F III	4	6	1.25E-01
555.2628	O IV	4	2	5.58E-02	596.6708	Ar VI	4	2	8.62E-02	661.3959	S IV	4	6	1.06E+00
555.6358	Ar VI	4	2	1.07E-01	596.6903	Fe III	5	7	7.20E-04	661.4554	S IV	4	4	1.17E-01
555.7660	Ar II	4	4	1.74E-06	596.8535	Fe III	3	3	8.11E-03	661.8689	Ar II	4	6	7.93E-02
556.8170	Ar II	4	6	1.57E-05	596.9351	Ca VIII	4	6	6.37E-02	662.2674	S II	4	6	2.77E-02
556.8869	Ar III	3	3	1.21E-01	597.0544	Fe III	3	5	2.70E-03	664.3136	S II	4	4	1.84E-02
557.765	Ca X	2	4	3.43E-01	597.1919	Fe III	1	3	1.08E-02	664.5623	Ar II	4	4	8.77E-03
558.3112	Ar III	1	3	1.21E-01	597.7001	Ar II	4	2	6.86E-02	665.5197	S II	4	2	9.18E-03
558.594	Ne VI	2	4	9.07E-02	597.8576	Ca VIII	4	4	7.07E-03	669.6982	Ca IV	2	2	2.89E-02
558.7550	S II	4	2	6.24E-03	600.6734	S II	4	6	7.68E-03	670.9455	Ar II	2	4	8.68E-02
558.9240	S II	4	4	1.25E-02	602.4410	S II	4	4	5.10E-03	671.0164	N II	3	5	3.20E-02
559.1310	S II	4	6	1.87E-02	602.8585	Ar II	2	2	6.80E-02	671.3864	N II	5	5	5.75E-02
560.2233	Ar II	2	4	1.73E-05	603.4303	S II	4	2	2.55E-03	671.4114	N II	1	3	7.66E-02
560.2394	C II	2	4	5.71E-02	605.6691	F II	5	3	4.41E-02	671.6309	N II	3	3	1.91E-02
560.3173	Al III	2	4	5.35E-03	606.2877	F II	3	1	5.89E-02	671.7734	N II	3	1	2.56E-02
560.4331	Al III	2	2	2.67E-03	606.8039	F II	5	5	1.32E-01	671.8513	Ar II	4	6	8.02E-02
560.4367	C II	4	6	5.14E-02	606.9226	F II	3	3	4.41E-02	672.0016	N II	5	3	1.92E-02
560.4386	C II	4	4	5.71E-03	607.4716	F II	1	3	1.76E-01	672.8563	Ar II	4	4	8.90E-03
562.711	Ne VI	4	4	9.00E-03	608.0621	F II	3	5	7.34E-02	676.1252	F IV	1	3	1.00E-01
562.803	Ne VI	4	6	8.10E-02	608.3968	O IV	2	2	6.70E-02	677.1563	F IV	3	3	2.50E-02
566.6134	Si III	1	3	1.55E-02	609.793	Mg X	2	4	8.42E-02	677.2145	F IV	3	5	7.49E-02
568.120	Al XI	2	2	3.75E-02	609.8286	O IV	4	2	6.69E-02	677.7290	S III	1	3	1.64E+00
568.418	Ne V	1	3	9.28E-02	615.6283	Ne I	1	3	6.48E-03	678.4559	S III	3	5	1.23E+00
569.758	Ne V	3	3	2.31E-02	618.6717	Ne I	1	3	1.60E-02	678.9410	F IV	5	3	9.96E-04
569.830	Ne V	3	5	6.94E-02	619.1024	Ne I	1	3	5.69E-03	678.9996	F IV	5	5	1.49E-02
570.6395	F IV	1	3	1.22E-01	624.3854	Ca VII	1	3	5.03E-02	679.0211	Al II	1	3	8.56E-04
571.1560	S II	4	2	1.20E-02	624.941	Mg X	2	2	4.10E-02	679.1037	S III	3	3	4.09E-01
571.3016	F IV	3	1	4.05E-02	626.8232	Ne I	1	3	1.31E-02	679.2168	F IV	5	7	8.36E-02
571.3640	S II	4	4	2.40E-02	629.6020	Ca VI	4	2	1.60E-02	679.4006	Ar II	2	4	8.81E-02
571.3737	F IV	3	3	3.05E-02	629.7320	O V	1	3	5.15E-01	680.6767	S III	5	7	1.37E+00
571.3900	F IV	3	5	5.07E-02	629.7388	Ne I	1	3	8.56E-03	680.698	F I	4	2	1.95E-02
571.7790	S II	4	6	3.60E-02	630.5353	Ca VII	3	5	3.74E-02	680.9246	S III	5	5	2.45E-01

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
680.9743	S III	3	5	2.85E-02	730.9630	Fe III	5	5	1.16E-02	749.2419	O I	3	3	1.11E-03
681.4888	S III	1	3	6.83E-02	731.1343	Fe III	7	9	9.91E-03	749.2672	O I	3	5	1.85E-03
681.5772	S III	5	3	1.63E-02	731.6140	Fe III	5	7	1.85E-02	749.6279	O I	1	3	4.44E-03
681.719	Na IX	2	4	9.24E-02	731.8454	Fe III	3	1	1.54E-02	750.2215	S IV	4	4	6.24E-01
682.576	F I	2	2	1.95E-02	731.9102	Fe III	3	3	3.85E-03	750.6197	F I	4	2	1.15E-03
682.8788	S III	3	3	1.70E-02	731.9984	Fe III	3	5	2.70E-02	750.6395	F I	2	4	9.62E-03
683.0663	S III	3	1	2.27E-02	732.1288	F I	4	4	1.07E-03	751.8889	F I	4	4	5.76E-03
683.4615	S III	5	5	5.11E-02	732.4192	Fe III	1	3	4.62E-02	752.9035	F I	2	2	4.60E-03
683.5274	Al II	1	3	9.45E-04	733.0300	F I	4	2	2.14E-04	753.7147	Si II	2	4	9.14E-04
684.9981	N III	2	4	1.35E-01	734.2961	Fe III	9	11	1.32E-02	753.7603	S IV	4	2	1.24E-01
685.3800	S III	5	3	1.69E-02	734.3012	F I	2	4	4.26E-04	754.1803	F I	2	4	2.30E-03
685.5151	N III	2	2	2.68E-01	734.4775	F I	4	2	5.49E-04	754.1927	Si II	2	2	1.83E-03
685.8174	N III	4	4	3.35E-01	734.6793	F I	4	4	5.27E-04	754.9369	Ar VI	2	4	6.68E-02
686.3357	N III	4	2	6.70E-02	734.7958	F I	4	6	4.74E-03	755.3500	Si II	4	4	2.28E-03
686.4884	Ar II	4	4	3.74E-04	735.2078	F I	2	2	8.52E-04	755.7654	O I	5	3	1.99E-03
687.0526	C II	2	4	3.36E-01	735.2474	Fe III	9	7	1.20E-04	755.7945	O I	5	5	5.97E-03
687.3453	C II	4	6	3.02E-01	735.3444	Fe III	9	9	1.80E-03	755.8301	Si II	4	2	4.56E-04
687.3521	C II	4	4	3.36E-02	735.4759	F I	4	4	2.75E-03	756.6704	O I	3	3	1.98E-03
689.9354	Al II	1	3	9.95E-04	735.8963	Ne I	1	3	1.49E-01	756.6996	O I	3	5	3.31E-03
691.0373	Ar II	4	2	7.42E-05	736.6639	F I	2	2	2.19E-03	757.0640	O I	1	3	7.95E-03
693.3019	Ar II	2	4	1.48E-04	736.7783	Fe III	5	3	4.31E-04	763.3337	N III	2	2	8.20E-02
693.9473	B II	1	3	9.93E-02	736.8669	F I	2	4	5.26E-03	763.6564	S II	4	2	3.98E-01
694.146	Na IX	2	2	4.54E-02	737.0185	Fe III	7	5	3.07E-04	764.3513	N III	4	2	8.19E-02
695.8289	Al III	2	4	9.26E-03	737.6108	Fe III	7	7	3.22E-03	764.4158	S II	4	4	7.95E-01
696.2170	Al III	2	2	4.62E-03	737.6683	F I	2	4	1.09E-03	765.1467	N IV	1	3	6.16E-01
697.9419	Ar II	2	2	2.94E-04	737.6688	O I	5	3	2.82E-04	765.6838	S II	4	6	1.19E+00
698.7270	S III	1	3	7.83E-01	737.6791	O I	5	5	8.48E-04	767.0653	Ar VI	4	6	5.92E-02
699.4905	Al II	1	3	1.05E-03	737.7085	Fe III	7	9	1.16E-02	767.7290	Ar VI	4	4	6.57E-03
700.1497	S III	3	5	3.26E-01	737.8303	Fe III	3	3	5.01E-03	769.3528	O I	5	3	4.77E-03
700.1883	S III	3	3	1.95E-01	738.3475	Fe III	1	3	1.50E-02	769.4083	O I	5	5	1.43E-02
700.24	Ar VIII	2	4	3.85E-01	738.5310	O I	3	3	2.82E-04	770.2600	O I	3	1	6.35E-03
700.2880	S III	3	1	2.60E-01	738.5413	O I	3	5	4.71E-04	770.2907	O I	3	3	4.76E-03
702.3370	O III	1	3	1.37E-01	738.6667	Fe III	5	5	4.29E-03	770.3464	O I	3	5	7.93E-03
702.7792	S III	5	5	5.84E-01	738.9059	O I	1	3	1.13E-03	770.4089	Ne VIII	2	4	1.03E-01
702.8181	S III	5	3	1.95E-01	739.0710	O I	5	3	3.63E-04	770.6986	O I	1	3	1.90E-02
702.8379	O III	3	1	4.56E-02	739.0792	O I	5	5	1.09E-03	775.3621	Be II	2	2	4.96E-03
702.8957	O III	3	3	3.42E-02	739.2617	Fe III	5	7	1.03E-02	775.3621	Be II	2	4	9.92E-03
702.8996	O III	3	5	5.70E-02	739.7240	Fe III	3	5	1.00E-02	776.9265	F I	4	4	3.54E-03
703.8505	O III	5	3	3.41E-02	739.9365	O I	3	3	3.63E-04	778.0877	F I	4	2	7.06E-04
703.8545	O III	5	5	1.02E-01	739.9447	O I	3	5	6.05E-04	779.3734	F I	2	4	1.41E-03
705.353	Ar V	1	3	6.12E-02	740.3129	O I	1	3	1.45E-03	779.9106	F I	4	4	1.95E-03
709.171	Ar V	3	1	2.03E-02	741.0311	O I	5	3	4.93E-04	780.3240	Ne VIII	2	2	5.05E-02
709.171	Ar V	3	3	1.52E-02	741.0492	O I	5	5	1.48E-03	780.3935	F I	4	6	1.76E-02
709.216	Ar V	3	5	2.53E-02	741.1833	Al II	1	3	1.09E-03	780.5419	F I	2	2	2.82E-03
713.81	Ar VIII	2	2	1.88E-01	741.9012	O I	3	3	4.92E-04	782.3763	F I	2	4	1.94E-02
714.6993	Al II	1	3	1.10E-03	741.9194	O I	3	5	8.21E-04	786.4683	S V	1	3	1.42E+00
715.595	Ar V	5	3	1.51E-02	742.2796	O I	1	3	1.97E-03	787.7105	O IV	2	4	1.11E-01
715.641	Ar V	5	5	4.53E-02	743.5740	Be II	2	2	2.73E-03	790.0069	F I	4	2	3.18E-03
718.0899	Ar II	4	2	3.64E-02	743.5740	Be II	2	4	5.48E-03	790.1122	O IV	4	4	1.10E-02
723.3606	Ar II	4	4	1.81E-01	743.7195	Ne I	1	3	1.21E-02	790.1990	O IV	4	6	9.93E-02
724.2881	S III	1	3	3.52E-01	743.9009	O I	5	3	7.09E-04	791.5136	O I	5	3	1.55E-02
725.5485	Ar II	2	2	1.44E-01	743.9292	O I	5	5	2.13E-03	791.8749	F I	4	4	1.58E-02
725.710	Be II	2	2	1.68E-03	744.7778	O I	3	3	7.09E-04	791.9732	O I	5	5	4.65E-02
725.710	Be II	2	4	3.38E-03	744.8061	O I	3	5	1.19E-03	792.2330	O I	3	1	2.07E-02
725.8584	S III	3	3	3.51E-01	744.9045	S IV	2	4	2.51E-01	792.5063	O I	3	3	1.55E-02
727.4700	F I	4	4	3.15E-04	745.1591	O I	1	3	2.83E-03	792.5370	F I	2	2	1.27E-02
727.5302	F I	4	6	2.83E-03	745.7606	F I	4	4	1.91E-03	792.9381	O I	1	3	6.18E-02
727.6821	Fe III	9	7	7.75E-03	746.7680	F I	4	2	3.82E-04	792.9671	O I	3	5	2.58E-02
728.6849	S III	5	3	3.50E-01	748.0149	F I	2	4	7.61E-04	794.4170	F I	2	4	6.31E-03
728.8121	Fe III	9	9	3.87E-02	748.3546	O I	5	3	1.11E-03	794.4767	Al II	1	3	5.65E-04
729.3490	Fe III	7	5	1.33E-02	748.3694	F I	4	4	9.65E-04	803.2406	Si II	2	4	4.62E-03
729.6149	F I	2	4	3.14E-03	748.3798	O I	5	5	3.33E-03	804.6561	Si II	2	2	1.00E-03
729.9971	Fe III	7	7	2.32E-02	748.3932	S IV	2	2	5.00E-01	805.0981	Si II	4	4	4.61E-04
730.8751	Fe III	5	3	1.62E-02	748.5951	F I	4	6	8.69E-03	805.0981	Si II	4	6	4.15E-03
730.9297	Ar II	2	4	7.15E-02	749.0284	F I	2	2	1.52E-03	806.5202	Si II	4	2	1.00E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
806.9592	F I	4	4	4.83E-03	842.0250	Be II	2	4	2.08E-02	875.7212	N I	4	6	5.33E-03
806.9654	F I	4	6	4.34E-02	842.0306	Be II	2	2	1.04E-02	876.0577	Ar I	1	3	9.30E-02
808.0781	Fe III	9	7	2.28E-03	843.7191	Si II	2	4	1.67E-02	876.0670	N I	4	6	1.87E-03
809.5992	F I	2	4	4.81E-02	843.7651	Ar IV	4	4	2.59E-02	876.6458	N I	4	4	1.25E-03
809.6556	S IV	2	2	1.04E-01	845.4112	Fe III	7	5	4.55E-02	876.9879	N I	4	2	6.22E-04
810.6650	O I	5	3	7.38E-04	845.6911	Fe III	9	7	6.83E-02	877.7983	O I	5	3	1.97E-02
810.9339	Fe III	7	7	7.55E-04	845.7683	Si II	4	6	1.50E-02	877.8787	O I	5	5	5.89E-02
811.0512	O I	5	5	2.22E-03	845.7688	Si II	4	4	1.67E-03	878.7331	Ar III	5	5	2.88E-02
811.2856	Fe III	7	5	1.51E-03	846.5307	Fe III	5	3	2.38E-02	878.9720	O I	3	1	2.61E-02
811.4968	O I	3	1	9.83E-04	847.5805	Fe III	5	5	3.98E-02	879.0194	O I	3	3	1.96E-02
811.7064	O I	3	3	7.38E-04	847.9197	Fe III	3	3	5.11E-02	879.1001	O I	3	5	3.26E-02
812.0936	O I	3	5	1.23E-03	848.0700	Si II	2	2	2.79E-03	879.5507	O I	1	3	7.83E-02
812.1594	O I	1	3	2.95E-03	848.6028	Fe III	1	3	6.80E-02	879.6212	Ar III	3	3	9.60E-03
812.9297	Fe III	5	7	1.51E-04	848.8194	Fe III	7	7	2.27E-02	879.9466	Ar I	1	3	2.68E-02
813.2832	Fe III	5	5	1.32E-03	848.9730	Fe III	3	5	1.70E-02	883.11	F VII	2	4	1.15E-01
813.3788	Fe III	9	9	6.94E-02	850.1409	Si II	4	2	2.78E-03	883.1800	Ar III	1	3	3.83E-02
814.1370	Fe III	9	7	1.38E-02	850.5962	Ar IV	4	6	3.85E-02	884.6967	Mg II	2	4	3.00E-04
814.2379	Fe III	5	3	7.90E-04	850.9068	Fe III	9	9	6.09E-04	884.7189	Mg II	2	2	1.50E-04
814.5651	Fe III	3	5	5.64E-04	851.0063	Fe III	5	7	4.52E-03	885.9729	N I	4	2	3.00E-03
815.5229	Fe III	3	3	1.69E-03	854.0739	Fe III	7	9	1.56E-04	886.2261	N I	4	4	5.99E-03
815.9411	S IV	4	2	1.03E-01	854.2001	Fe III	9	7	1.22E-04	886.3326	N I	4	6	8.99E-03
816.1548	Fe III	1	3	2.25E-03	857.3918	Fe III	7	7	3.63E-04	887.4051	Ar III	3	5	1.58E-02
816.1694	Fe III	3	1	2.77E-02	858.0918	C II	2	2	1.30E-02	887.4580	N I	4	6	3.28E-03
816.2722	Fe III	7	9	1.78E-02	858.5512	Fe III	9	7	1.05E-03	888.0237	N I	4	4	2.19E-03
817.0359	Fe III	7	7	4.14E-02	858.5590	C II	4	2	1.30E-02	888.3719	N I	4	2	1.10E-03
818.3812	Fe III	7	5	2.36E-02	858.6091	Fe III	9	9	1.57E-02	889.7228	Si II	2	4	4.34E-02
818.5752	Si II	2	4	8.18E-03	858.6464	Fe III	7	5	2.69E-03	890.79	F VII	2	2	5.73E-02
818.9707	Fe III	5	3	2.90E-02	859.6232	Fe III	5	7	2.89E-04	892.0011	Si II	4	6	3.89E-02
819.0619	Fe III	5	7	3.30E-02	859.7227	Fe III	9	11	1.15E-01	892.0024	Si II	4	4	4.33E-03
820.2707	Fe III	3	3	6.88E-03	860.5925	Fe III	5	3	3.76E-03	899.4063	Si II	2	2	5.70E-03
820.4139	Fe III	5	5	2.06E-02	860.6215	Mg II	2	4	1.53E-04	901.7359	Si II	4	2	5.69E-03
820.5041	Si II	4	6	7.35E-03	860.6319	Mg II	2	2	7.62E-05	903.6235	C II	2	4	1.68E-01
820.5045	Si II	4	4	8.16E-04	860.8843	Fe III	5	5	3.76E-02	903.9616	C II	2	2	3.36E-01
820.9100	Fe III	1	3	8.25E-02	861.7756	Fe III	7	7	2.82E-02	904.1416	C II	4	4	4.19E-01
820.9211	Si II	2	2	1.60E-03	861.8339	Fe III	7	9	1.01E-01	904.4801	C II	4	2	8.39E-02
821.7184	Fe III	3	5	4.81E-02	862.0280	Fe III	3	3	4.38E-02	906.2074	N I	4	2	5.57E-03
822.152	Ar V	1	3	4.33E-02	862.1904	Fe III	7	5	2.07E-04	906.4316	N I	4	4	1.11E-02
822.8615	Si II	4	2	1.59E-03	862.3208	Fe III	3	5	8.75E-02	906.6185	N I	4	6	1.67E-02
823.2563	Fe III	9	11	1.61E-02	862.4020	N I	4	6	5.35E-04	906.8765	S II	4	6	1.87E-01
824.7988	Fe III	9	9	2.19E-03	862.7341	Fe III	1	3	1.31E-01	907.3752	Mg II	2	4	4.42E-04
826.3869	Fe III	9	7	1.45E-04	862.9877	N I	4	4	3.57E-04	907.4115	Mg II	2	2	2.21E-04
827.029	Ar V	3	5	3.23E-02	863.3394	N I	4	2	1.78E-04	909.6974	N I	4	6	6.67E-03
827.343	Ar V	3	3	1.08E-02	864.0299	Fe III	5	7	8.99E-02	910.2782	N I	4	4	4.45E-03
827.7742	Fe III	7	9	1.40E-02	864.4469	Fe III	5	5	1.80E-04	910.4849	S II	4	4	1.24E-01
829.3738	Fe III	7	7	3.91E-03	864.7423	Fe III	5	3	2.52E-04	910.6454	N I	4	2	2.22E-03
830.6322	Fe III	7	5	3.71E-04	865.2270	N I	4	6	7.68E-04	912.7361	S II	4	2	6.21E-02
831.4615	Fe III	5	7	1.25E-02	865.8346	N I	4	4	5.11E-04	915.6131	N II	1	3	1.60E-01
832.7263	Fe III	5	5	5.19E-03	865.8953	Fe III	3	5	4.19E-04	915.8795	N II	3	1	5.36E-02
832.7583	O II	4	2	4.44E-02	866.1796	N I	4	2	2.56E-04	916.0172	N II	3	5	6.69E-02
832.9294	O III	1	3	1.07E-01	866.1917	Fe III	3	3	5.99E-05	916.0213	N II	3	3	4.02E-02
833.3303	O II	4	4	8.86E-02	866.3054	Fe III	3	1	2.39E-04	916.7068	N II	5	5	1.21E-01
833.6201	Fe III	5	3	5.18E-04	866.8000	Ar I	1	3	1.06E-01	916.7109	N II	5	3	4.02E-02
833.7153	O III	3	3	2.66E-02	866.9046	Fe III	1	3	7.18E-04	919.658	O I	5	3	7.85E-06
833.7487	O III	3	5	8.00E-02	869.4042	N I	4	6	1.16E-03	919.658	O I	5	5	1.18E-04
834.0703	Fe III	3	5	1.21E-02	869.4238	N I	4	4	2.26E-03	919.658	O I	5	7	6.59E-04
834.4654	O II	4	6	1.32E-01	869.4820	N I	4	6	3.40E-03	919.7810	Ar II	4	2	1.81E-02
834.858	Ar V	5	7	3.58E-02	869.7542	Ar I	1	3	1.19E-02	919.917	O I	5	3	1.76E-04
834.9670	Fe III	3	3	6.04E-03	870.0260	N I	4	4	7.71E-04	920.9630	H I	2	2	5.35E-04
835.0589	O III	5	3	1.07E-03	870.3317	Mg II	2	4	2.11E-04	920.9630	H I	2	4	1.07E-03
835.0924	O III	5	5	1.60E-02	870.3463	Mg II	2	2	1.05E-04	920.998	O I	3	3	1.96E-04
835.2891	O III	5	7	8.94E-02	870.3675	N I	4	2	3.86E-04	920.998	O I	3	5	5.88E-04
835.6294	Fe III	1	3	1.81E-02	871.0999	Ar III	5	3	9.70E-03	921.258	O I	3	3	1.75E-04
835.779	Ar V	5	5	6.39E-03	875.2774	N I	4	2	1.78E-03	921.581	O I	1	3	7.83E-04
836.101	Ar V	5	3	4.26E-04	875.5287	Ar III	3	1	1.29E-02	921.841	O I	1	3	1.75E-04
840.0277	Ar IV	4	2	1.30E-02	875.6567	N I	4	4	3.55E-03	921.857	O I	5	3	1.08E-05

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
921.857	O I	5	5	1.62E-04	936.6295	O I	5	7	3.02E-03	958.525	F I	2	4	3.14E-02
921.857	O I	5	7	9.03E-04	936.8022	Fe II	2	2	1.68E-05	963.9903	N I	4	6	1.57E-02
922.200	O I	5	3	2.42E-04	936.8341	Fe II	4	4	1.23E-05	964.6256	N I	4	4	1.05E-02
923.1503	H I	2	2	7.38E-04	937.1225	Fe II	4	6	1.55E-05	965.0413	N I	4	2	5.22E-03
923.1503	H I	2	4	1.48E-03	937.5362	Fe II	4	6	1.46E-05	971.7371	O I	5	3	1.54E-04
923.204	O I	3	3	2.68E-04	937.6515	Fe II	10	12	1.45E-02	971.7376	O I	5	5	2.31E-03
923.204	O I	3	5	8.05E-04	937.8033	H I	2	4	5.20E-03	971.7382	O I	5	7	1.30E-02
923.548	O I	3	3	2.42E-04	937.8035	H I	2	2	2.60E-03	972.5366	H I	2	4	1.93E-02
923.790	O I	1	3	1.07E-03	937.8395	Fe II	2	4	1.33E-05	972.5370	H I	2	2	9.67E-03
923.8784	Fe II	10	8	6.83E-03	937.8405	O I	5	3	8.67E-04	973.2339	O I	3	3	3.84E-03
924.135	O I	1	3	2.42E-04	937.8699	Fe II	10	10	2.22E-03	973.2343	O I	3	5	1.15E-02
924.950	O I	5	3	1.53E-05	938.0112	Fe II	10	8	3.46E-03	973.8852	O I	1	3	1.53E-02
924.950	O I	5	5	2.29E-04	938.0200	O I	3	3	8.99E-04	976.4481	O I	5	3	3.27E-03
924.950	O I	5	7	1.29E-03	938.0200	O I	3	5	2.70E-03	977.0201	C III	1	3	7.67E-01
925.446	O I	5	3	3.50E-04	938.6249	O I	1	3	3.59E-03	977.9594	O I	3	3	3.26E-03
926.2122	Fe II	10	10	3.01E-02	938.7080	Fe II	6	8	3.86E-06	978.6170	O I	1	3	3.26E-03
926.2256	H I	2	4	2.12E-03	939.1614	Fe II	10	8	1.78E-04	988.5778	O I	5	3	5.35E-04
926.2257	H I	2	2	1.06E-03	939.2346	O I	3	3	8.65E-04	988.6549	O I	5	5	8.03E-03
926.306	O I	3	3	3.81E-04	939.5904	Fe II	8	6	6.00E-03	988.7734	O I	5	7	4.49E-02
926.306	O I	3	5	1.15E-03	939.6630	Fe II	4	2	7.29E-03	989.799	N III	2	4	1.22E-01
926.804	O I	3	3	3.50E-04	939.8412	O I	1	3	8.65E-04	989.8731	Si II	2	4	1.71E-01
926.896	O I	1	3	1.52E-03	940.0572	Fe II	6	4	7.47E-03	990.1269	O I	3	3	1.34E-02
927.1745	Fe II	8	8	1.65E-02	940.1924	Fe II	10	10	1.52E-02	990.2043	O I	3	5	4.01E-02
927.394	O I	1	3	3.49E-04	940.6746	Fe II	2	2	4.16E-03	990.8010	O I	1	3	5.34E-02
928.1111	Fe II	8	6	1.19E-02	941.2667	Fe II	8	10	1.22E-02	991.511	N III	4	4	1.22E-02
929.5168	O I	5	3	2.27E-05	941.4091	Fe II	8	8	8.35E-03	991.577	N III	4	6	1.10E-01
929.5168	O I	5	5	3.41E-04	941.5532	Fe II	8	6	5.13E-04	992.6828	Si II	4	6	1.53E-01
929.5168	O I	5	7	1.90E-03	941.7830	Fe II	4	4	2.05E-04	992.6956	Si II	4	4	1.70E-02
929.5250	Fe II	8	10	8.52E-03	942.0945	Fe II	6	6	3.19E-03	993.229	B I	2	4	4.08E-05
929.6128	Fe II	6	8	1.58E-02	942.5676	Fe II	8	8	4.08E-03	993.380	B I	4	4	1.02E-04
930.0233	Fe II	6	4	1.47E-02	942.7991	Fe II	2	4	1.45E-02	1010.903	B I	2	4	1.66E-04
930.2566	O I	5	3	5.32E-04	943.6062	Fe II	8	10	4.30E-03	1011.058	B I	4	4	4.15E-04
930.5543	Fe II	6	6	6.31E-03	943.8278	Fe II	4	6	1.12E-02	1012.495	S III	1	3	4.25E-02
930.5810	Fe II	10	8	3.21E-07	943.9229	Fe II	6	8	7.97E-03	1015.502	S III	3	1	1.41E-02
930.7482	H I	2	2	1.60E-03	944.0678	Fe II	6	6	5.54E-03	1015.567	S III	3	3	1.06E-02
930.7482	H I	2	4	3.21E-03	944.523	S VI	2	2	2.20E-01	1015.779	S III	3	5	1.76E-02
930.8862	O I	3	3	5.67E-04	945.0877	Fe II	6	8	1.03E-02	1020.6989	Si II	2	2	1.51E-02
930.8862	O I	3	5	1.70E-03	945.191	C I	1	3	1.52E-01	1021.108	S III	5	3	1.06E-02
931.4820	O I	1	3	2.27E-03	945.338	C I	3	3	1.52E-01	1021.323	S III	5	5	3.16E-02
931.6282	O I	3	3	5.31E-04	945.579	C I	5	3	1.52E-01	1023.7002	Si II	4	2	1.51E-02
931.7124	Fe II	4	4	4.04E-04	945.7998	Fe II	6	4	9.55E-04	1025.7218	H I	2	4	5.27E-02
932.0537	Ar II	2	2	1.78E-02	945.8083	Fe II	4	6	8.60E-03	1025.7229	H I	2	2	2.63E-02
932.2249	O I	1	3	5.30E-04	946.7033	Mg II	2	4	6.65E-04	1025.7616	O I	5	7	1.58E-02
932.2453	Fe II	4	6	2.21E-02	946.7694	Mg II	2	2	3.32E-04	1025.7626	O I	5	5	2.82E-03
932.6807	Fe II	10	10	3.98E-06	946.8479	Fe II	4	2	1.32E-03	1025.7633	O I	5	3	1.88E-04
932.7069	Fe II	2	4	2.87E-02	947.5468	Fe II	4	4	6.80E-03	1025.9681	Mg II	2	4	9.36E-04
932.8612	Fe II	10	8	4.89E-05	947.8750	Fe II	2	2	9.30E-03	1026.1134	Mg II	2	2	4.68E-04
932.9449	Fe II	8	6	9.25E-07	948.5754	Fe II	2	4	7.38E-03	1027.4305	O I	3	5	1.41E-02
933.1907	Fe II	6	4	1.52E-05	948.6855	O I	5	3	6.25E-05	1027.4313	O I	3	3	4.70E-03
933.3550	Fe II	8	6	3.14E-05	948.6855	O I	5	5	9.37E-04	1028.1571	O I	1	3	1.88E-02
933.378	S VI	2	4	4.45E-01	948.6855	O I	5	7	5.24E-03	1031.9261	O VI	2	4	1.33E-01
933.9252	Fe II	8	8	7.35E-06	949.7429	H I	2	4	9.30E-03	1036.2986	Be II	2	4	5.51E-02
934.8913	Fe II	4	4	3.42E-05	949.7431	H I	2	2	4.65E-03	1036.3193	Be II	2	2	2.75E-02
935.1264	Fe II	6	4	1.73E-06	950.1121	O I	3	3	1.56E-03	1036.3367	C II	2	2	1.22E-01
935.2738	Al II	1	3	3.00E-03	950.1121	O I	3	5	4.68E-03	1037.0182	C II	4	2	1.23E-01
935.4137	Fe II	6	6	9.99E-06	950.7327	O I	1	3	6.24E-03	1037.6167	O VI	2	2	6.61E-02
935.5176	Fe II	10	12	2.59E-05	950.8846	O I	5	3	1.57E-03	1038.29	S I	5	3	7.22E-04
935.7989	Fe II	4	2	2.39E-06	951.871	F I	4	2	1.58E-02	1038.29	S I	5	5	2.16E-03
935.8260	Fe II	6	6	2.98E-05	952.3178	O I	3	3	1.56E-03	1039.2304	O I	5	3	9.04E-03
935.8926	Fe II	2	4	4.87E-05	952.9413	O I	1	3	1.56E-03	1040.9425	O I	3	3	9.03E-03
936.0401	Fe II	8	10	2.19E-05	953.4152	N I	4	2	1.16E-02	1041.6876	O I	1	3	9.02E-03
936.2219	Fe II	8	8	1.75E-05	953.6549	N I	4	4	2.31E-02	1042.58	S I	3	1	9.57E-04
936.3991	Fe II	6	8	1.85E-05	953.9699	N I	4	6	3.47E-02	1042.58	S I	3	5	1.20E-03
936.6295	O I	5	3	3.60E-05	954.827	F I	4	4	7.89E-02	1042.58	S I	3	3	7.18E-04
936.6295	O I	5	5	5.40E-04	955.546	F I	2	2	6.31E-02	1044.51	S I	1	3	2.87E-03



**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
1045.75	S I	5	3	4.17E-03	1089.6881	Fe II	8	8	3.90E-03	1122.3438	C I	5	5	8.83E-04
1045.75	S I	5	5	1.25E-02	1091.2987	Fe II	8	6	4.89E-04	1122.447	C I	1	3	5.88E-03
1047.652	B I	2	4	1.15E-03	1092.67	S I	5	5	1.10E-02	1122.5183	C I	1	3	1.40E-03
1047.697	B I	2	2	2.31E-03	1093.0576	Fe II	6	8	9.83E-03	1122.5241	Fe III	9	7	7.97E-02
1047.820	B I	4	4	2.89E-03	1093.06	S I	5	3	3.68E-03	1122.653	C I	3	3	1.48E-03
1047.865	B I	4	2	5.78E-04	1094.6782	Fe II	6	6	5.29E-03	1122.7250	C I	3	3	3.50E-04
1048.2199	Ar I	1	3	2.44E-01	1095.9112	Fe II	6	4	9.12E-04	1122.7727	C I	3	1	4.67E-04
1050.10	S I	3	1	5.53E-03	1096.6073	Fe II	8	6	8.89E-03	1122.8427	Fe II	8	6	5.22E-02
1050.10	S I	3	5	6.92E-03	1096.7824	Fe II	6	4	4.31E-03	1122.994	C I	5	3	5.88E-05
1050.10	S I	3	3	4.15E-03	1096.8768	Fe II	10	8	1.38E-02	1123.0654	C I	5	3	3.50E-04
1050.35	S I	5	5	2.15E-02	1097.0191	Fe II	4	6	8.20E-03	1124.1227	Fe II	6	4	2.53E-02
1050.54	S I	5	3	7.20E-03	1097.42	S I	3	5	6.09E-03	1124.8742	Fe III	7	5	5.31E-02
1052.06	S I	1	3	1.65E-02	1097.82	S I	3	3	3.66E-03	1125.4476	Fe II	10	8	3.00E-03
1054.74	S I	3	5	1.19E-02	1098.02	S I	3	1	4.87E-03	1126.4207	Fe II	6	6	4.96E-02
1054.93	S I	3	3	7.16E-03	1098.2574	Fe II	4	4	6.48E-03	1126.5914	Fe II	4	4	5.67E-02
1055.02	S I	3	1	9.54E-03	1099.0447	Fe II	4	2	1.26E-03	1126.7231	Fe III	5	3	2.78E-02
1055.2617	Fe II	10	8	7.15E-04	1099.1323	Fe II	4	4	9.67E-03	1126.8397	Fe II	8	8	2.90E-02
1056.91	S I	1	3	2.86E-02	1099.6395	Fe II	2	4	7.04E-03	1126.9553	Fe II	8	6	5.20E-03
1059.16	S I	5	3	4.67E-03	1099.96	S I	1	3	1.46E-02	1127.0984	Fe II	10	10	1.32E-02
1059.16	S I	5	5	1.40E-02	1100.0198	Fe II	6	6	8.44E-03	1127.8597	Fe II	6	4	6.47E-03
1059.54	S I	5	3	2.06E-04	1100.4288	Fe II	2	2	8.85E-03	1128.0424	Fe III	7	7	2.64E-02
1059.54	S I	5	5	6.19E-04	1100.5166	Fe II	2	4	1.38E-02	1128.0457	Fe II	2	4	8.10E-02
1059.5641	Fe II	8	8	2.55E-04	1101.5260	Fe II	8	8	4.94E-03	1128.075	C I	1	3	2.04E-03
1060.4420	Fe II	8	6	4.56E-04	1102.3836	Fe II	4	6	4.13E-03	1128.252	C I	3	1	6.80E-04
1062.664	S IV	2	4	4.87E-02	1104.9693	Fe II	6	8	1.09E-03	1128.284	C I	3	3	5.10E-04
1062.7497	Fe II	6	8	5.64E-05	1107.4120	Fe II	10	8	3.37E-05	1128.408	C I	3	5	8.50E-04
1063.1764	Fe II	10	10	6.78E-02	1109.8407	Fe II	8	6	9.71E-05	1128.4833	Fe II	10	10	2.95E-03
1063.63	S I	3	1	6.20E-03	1110.2803	Fe II	10	10	4.18E-04	1128.5567	Fe II	4	2	6.30E-03
1063.63	S I	3	5	7.76E-03	1112.0277	Fe II	6	4	1.81E-04	1128.627	C I	5	3	5.10E-04
1063.63	S I	3	3	4.65E-03	1112.0480	Fe II	10	12	2.72E-03	1128.7181	Fe III	5	5	4.62E-02
1063.6328	Fe II	6	6	4.33E-04	1112.1511	Fe II	8	8	7.71E-04	1128.752	C I	5	5	1.53E-03
1063.9718	Fe II	10	8	1.54E-02	1113.3362	Fe II	6	6	1.05E-03	1128.8166	C I	3	5	6.62E-03
1064.00	S I	3	1	2.74E-04	1113.7643	Fe II	4	2	2.51E-04	1128.8995	Fe II	4	6	2.43E-02
1064.00	S I	3	5	3.42E-04	1114.1258	C I	3	5	2.25E-03	1129.0777	C I	3	5	8.69E-04
1064.00	S I	3	3	2.05E-04	1114.4435	Fe II	4	4	1.29E-03	1129.135	C I	5	7	7.41E-03
1065.64	S I	1	3	1.85E-02	1114.457	C I	5	7	2.52E-03	1129.1607	C I	5	5	1.32E-03
1065.8427	Fe II	4	6	2.12E-04	1114.4611	C I	5	5	4.50E-04	1129.1851	Fe III	3	3	5.94E-02
1066.01	S I	1	3	8.20E-04	1114.63	C I	1	3	3.00E-03	1129.196	C I	1	3	8.82E-03
1066.6599	Ar I	1	3	6.65E-02	1114.83	C I	3	3	7.50E-04	1129.3175	C I	1	3	2.08E-03
1067.5437	Fe II	8	10	1.92E-02	1115.0440	Fe II	8	10	2.30E-03	1129.405	C I	3	3	2.21E-03
1068.3456	Fe II	8	8	3.71E-02	1115.17	C I	5	3	3.00E-05	1129.4221	C I	5	5	1.56E-03
1069.0440	Fe II	6	4	2.19E-04	1115.1857	Fe II	2	2	1.76E-03	1129.5267	C I	3	3	5.21E-04
1070.1346	Fe II	8	6	2.66E-02	1115.6612	Fe II	6	8	1.94E-03	1129.5943	C I	3	1	6.95E-04
1071.2764	Fe II	4	4	4.93E-04	1115.7577	Fe II	4	6	1.63E-03	1129.749	C I	5	3	8.81E-05
1071.5842	Fe II	6	8	3.54E-02	1115.8666	Fe II	2	4	1.40E-03	1129.8712	C I	5	3	5.21E-04
1072.5914	Fe II	2	4	7.03E-04	1117.244	C I	3	5	3.87E-04	1130.0161	Fe II	2	2	3.60E-03
1072.973	S IV	4	6	4.34E-02	1117.393	C I	3	5	3.10E-03	1130.3427	Fe II	8	8	7.22E-03
1073.2763	Fe II	6	4	3.30E-02	1117.581	C I	5	5	6.97E-04	1130.3448	Fe II	4	4	1.77E-04
1073.3211	Fe II	4	2	3.22E-02	1117.724	C I	5	7	3.47E-03	1130.3969	Fe III	1	3	7.92E-02
1073.3841	Fe II	6	6	1.41E-02	1117.730	C I	5	5	6.19E-04	1130.4432	Fe II	6	8	6.42E-03
1073.518	S IV	4	4	4.83E-03	1117.866	C I	1	3	4.13E-03	1130.5596	Fe II	6	6	2.76E-03
1074.6411	Fe II	2	2	1.84E-02	1117.9202	C I	1	3	9.87E-04	1131.1888	Fe III	3	5	1.98E-02
1075.5264	Fe II	4	4	9.05E-04	1118.070	C I	3	3	1.04E-03	1131.8089	Fe II	2	4	1.26E-02
1075.6347	Fe II	4	6	4.94E-02	1118.1252	C I	3	3	2.47E-04	1131.9080	Fe III	5	7	5.27E-03
1076.8518	Fe II	2	4	6.41E-02	1118.408	C I	5	3	4.12E-05	1132.0078	Fe II	8	10	3.73E-03
1081.8748	Fe II	10	12	1.38E-02	1118.4629	C I	5	3	2.47E-04	1133.0566	Fe II	4	6	9.66E-03
1083.4204	Fe II	10	10	2.12E-03	1121.453	C I	1	3	1.35E-03	1133.4048	Fe II	8	10	8.33E-04
1083.9937	N II	1	3	1.09E-01	1121.641	C I	3	1	4.49E-04	1133.6653	Fe II	10	8	6.66E-04
1084.5659	N II	3	3	2.71E-02	1121.660	C I	3	3	3.36E-04	1133.9688	Fe II	6	8	6.89E-03
1084.5841	N II	3	5	8.14E-02	1121.758	C I	3	5	5.61E-04	1134.1653	N I	4	2	3.85E-03
1085.1381	Fe II	10	8	1.70E-04	1121.9748	Fe II	10	8	8.14E-02	1134.4149	N I	4	4	7.70E-03
1085.5328	N II	5	3	1.09E-03	1121.999	C I	5	3	3.36E-04	1134.9803	N I	4	6	1.16E-02
1085.5511	N II	5	5	1.63E-02	1122.0038	C I	3	5	4.42E-03	1138.383	C I	1	3	3.34E-03
1085.7096	N II	5	7	9.11E-02	1122.098	C I	5	5	1.01E-03	1138.557	C I	3	1	1.11E-03
1087.9559	Fe II	8	10	1.17E-02	1122.328	C I	5	7	4.95E-03	1138.595	C I	3	3	8.37E-04

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
1138.6323	Fe II	8	8	1.60E-03	1161.749	S I	3	1	6.45E-03	1238.341	S I	1	3	5.73E-04
1138.743	C I	3	5	1.40E-03	1163.996	S I	1	3	1.93E-02	1238.82	N V	2	4	1.57E-01
1138.946	C I	5	3	8.37E-04	1188.833	C I	1	3	1.29E-02	1239.332	S I	3	3	1.04E-04
1139.093	C I	5	5	2.51E-03	1188.992	C I	3	1	4.31E-03	1239.366	S I	3	5	3.12E-04
1139.514	C I	3	5	1.06E-02	1189.065	C I	3	3	3.23E-03	1239.925	Mg II	2	4	3.72E-04
1139.766	C I	3	5	1.37E-03	1189.249	C I	3	5	5.38E-03	1240.395	Mg II	2	2	1.85E-04
1139.79	C I	1	3	1.41E-02	1189.447	C I	5	3	3.23E-03	1241.905	S I	5	3	1.02E-03
1139.812	C I	5	7	1.18E-02	1189.631	C I	5	5	9.69E-03	1242.066	S I	1	3	4.14E-04
1139.865	C I	5	5	2.12E-03	1190.20	S III	1	3	2.53E-02	1242.80	N V	2	2	7.80E-02
1140.01	C I	3	3	3.53E-03	1190.416	Si II	2	4	2.93E-01	1247.107	S I	5	3	8.86E-07
1140.010	C I	1	3	3.28E-03	1193.009	C I	3	5	3.56E-02	1247.134	S I	5	5	1.33E-05
1140.117	C I	5	5	2.46E-03	1193.031	C I	1	3	4.76E-02	1247.160	S I	5	7	7.44E-05
1140.223	C I	3	3	8.20E-04	1193.240	C I	5	7	3.99E-02	1248.044	S I	3	3	1.01E-03
1140.316	C I	3	1	1.09E-03	1193.264	C I	3	3	1.19E-02	1250.584	S II	4	2	5.20E-03
1140.35	C I	5	3	1.41E-04	1193.290	Si II	2	2	5.84E-01	1250.816	S I	1	3	1.01E-03
1140.574	C I	5	3	8.19E-04	1193.393	C I	5	5	7.13E-03	1253.297	S I	3	3	2.20E-05
1140.5813	Fe II	8	6	1.15E-03	1193.649	C I	5	3	4.75E-04	1253.325	S I	3	5	6.61E-05
1142.3118	Fe II	6	8	1.53E-03	1193.679	C I	3	5	4.40E-03	1253.811	S II	4	4	1.03E-02
1142.3656	Fe II	10	8	1.65E-03	1193.995	C I	1	3	1.05E-02	1255.27	Si I	1	3	2.89E-01
1143.2260	Fe II	10	10	2.05E-02	1194.06	S III	3	5	1.89E-02	1256.093	S I	1	3	8.80E-05
1144.2735	Fe II	6	6	6.11E-04	1194.063	C I	5	5	7.91E-03	1256.49	Si I	3	3	2.89E-01
1144.9390	Fe II	10	12	1.33E-01	1194.229	C I	3	3	2.64E-03	1258.80	Si I	5	3	2.89E-01
1145.5152	Fe II	6	4	1.43E-03	1194.406	C I	3	1	3.51E-03	1259.519	S II	4	6	1.55E-02
1146.8315	Fe II	4	6	2.14E-03	1194.45	S III	3	3	6.29E-03	1260.422	Si II	2	4	1.18E+00
1146.9516	Fe II	8	6	4.74E-03	1194.500	Si II	4	4	7.29E-01	1260.5333	Fe II	10	8	1.76E-02
1147.4092	Fe II	8	8	3.77E-02	1194.615	C I	5	3	2.64E-03	1260.735	C I	1	3	3.87E-02
1148.0788	Fe II	4	4	3.91E-05	1197.394	Si II	4	2	1.46E-01	1260.927	C I	3	1	1.29E-02
1148.2773	Fe II	8	10	1.13E-01	1199.5496	N I	4	6	1.63E-01	1260.996	C I	3	3	9.67E-03
1148.9564	Fe II	4	2	1.23E-02	1200.2233	N I	4	4	1.08E-01	1261.122	C I	3	5	1.61E-02
1149.5892	Fe II	2	4	2.77E-03	1200.7098	N I	4	2	5.41E-02	1261.426	C I	5	3	9.67E-03
1150.2904	Fe II	6	4	8.84E-03	1200.97	S III	5	7	2.10E-02	1261.552	C I	5	5	2.90E-02
1150.4691	Fe II	2	2	8.62E-02	1201.73	S III	5	5	3.75E-03	1262.860	S I	5	3	2.00E-03
1150.6851	Fe II	6	6	5.12E-02	1202.12	S III	5	3	2.50E-04	1264.738	Si II	4	6	1.06E+00
1151.1458	Fe II	6	8	9.50E-02	1206.500	Si III	1	3	1.68E+00	1265.002	Si II	4	4	1.18E-01
1151.21	B I	2	4	1.94E-02	1214.281	S I	5	3	1.99E-05	1266.6772	Fe II	8	8	6.26E-03
1151.28	B I	2	2	3.88E-02	1214.294	S I	5	5	2.99E-04	1267.4220	Fe II	8	6	1.12E-02
1151.42	B I	4	4	4.85E-02	1214.318	S I	5	7	1.68E-03	1269.208	S I	3	3	1.99E-03
1151.49	B I	4	2	9.70E-03	1215.6682	H I	2	4	2.77E-01	1270.769	S I	5	3	4.14E-05
1152.4281	Fe II	4	2	1.38E-03	1215.6736	H I	2	2	1.39E-01	1270.780	S I	5	7	3.47E-03
1152.8755	Fe II	4	4	6.28E-02	1216.424	S I	5	3	2.32E-04	1270.787	S I	5	5	6.21E-04
1153.2719	Fe II	4	6	7.94E-02	1218.513	S I	5	3	1.81E-05	1271.2325	Fe II	6	8	1.38E-03
1153.9500	Fe II	2	2	7.89E-04	1218.570	S I	5	5	2.72E-04	1271.9826	Fe II	6	6	1.06E-02
1154.3985	Fe II	2	4	6.83E-02	1218.595	S I	5	7	1.52E-03	1272.075	S I	1	3	1.99E-03
1155.809	C I	1	3	6.05E-03	1220.149	S I	3	3	4.96E-04	1272.6129	Fe II	6	4	5.41E-03
1155.979	C I	3	1	2.01E-03	1220.163	S I	3	5	1.49E-03	1275.1443	Fe II	4	6	5.21E-03
1156.026	S I	5	5	1.46E-02	1221.752	S I	5	3	3.55E-04	1275.7778	Fe II	4	4	1.21E-02
1156.028	C I	3	3	1.52E-03	1222.313	S I	3	3	2.31E-04	1277.197	S I	3	3	1.02E-03
1156.199	C I	3	5	2.52E-03	1222.799	S I	1	3	1.98E-03	1277.216	S I	3	5	3.08E-03
1156.276	S I	5	3	4.87E-03	1224.422	S I	3	3	4.50E-04	1277.245	C I	1	3	1.07E-01
1156.389	C I	5	3	1.51E-03	1224.471	S I	5	3	1.27E-05	1277.282	C I	3	5	8.03E-02
1156.560	C I	5	5	4.53E-03	1224.480	S I	3	5	1.35E-03	1277.513	C I	3	3	2.67E-02
1157.769	C I	3	5	1.83E-02	1224.506	S I	5	5	1.91E-04	1277.550	C I	5	7	9.00E-02
1157.910	C I	1	3	2.44E-02	1224.544	S I	5	7	1.07E-03	1277.6431	Fe II	2	4	1.73E-02
1158.019	C I	5	7	2.05E-02	1224.972	S I	1	3	2.31E-04	1277.723	C I	5	5	1.61E-02
1158.035	C I	3	5	2.33E-03	1227.091	S I	1	3	1.80E-03	1277.954	C I	5	3	1.07E-03
1158.130	C I	3	3	6.10E-03	1227.692	S I	3	3	3.53E-04	1279.890	C I	3	5	8.82E-03
1158.132	C I	5	5	3.66E-03	1229.607	S I	5	3	5.77E-04	1280.100	S I	1	3	4.11E-03
1158.324	C I	1	3	5.57E-03	1230.375	S I	1	3	3.53E-04	1280.135	C I	1	3	2.12E-02
1158.397	C I	5	5	4.18E-03	1230.438	S I	3	3	3.17E-04	1280.333	C I	5	5	1.59E-02
1158.492	C I	5	3	2.44E-04	1230.473	S I	3	5	9.51E-04	1280.404	C I	3	3	5.29E-03
1158.544	C I	3	3	1.39E-03	1233.132	S I	1	3	1.26E-03	1280.597	C I	3	1	7.05E-03
1158.674	C I	3	1	1.86E-03	1233.279	S I	5	3	4.17E-06	1280.847	C I	5	3	5.29E-03
1158.907	C I	5	3	1.40E-03	1233.312	S I	5	5	6.26E-05	1286.79	Al I	2	4	4.82E-03
1161.344	S I	3	5	8.07E-03	1233.345	S I	5	7	3.51E-04	1288.65	Al I	4	4	1.21E-02
1161.595	S I	3	3	4.84E-03	1235.624	S I	3	3	5.74E-04	1295.653	S I	5	5	8.36E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
1296.174	S I	5	3	2.78E-02	1519.598	B I	4	4	4.27E-04	1600.763	B I	4	6	3.27E-02
1302.1715	O I	5	3	5.04E-02	1519.598	B I	4	6	3.85E-03	1600.846	B I	4	2	6.75E-03
1302.336	S I	3	5	4.62E-02	1524.173	B I	2	2	1.02E-02	1608.4511	Fe II	10	8	8.92E-02
1302.862	S I	3	3	2.77E-02	1524.527	B I	4	2	1.02E-02	1614.566	Si I	1	3	7.37E-03
1303.110	S I	3	1	3.70E-02	1525.282	B I	2	4	5.90E-03	1615.949	Si I	3	1	2.45E-03
1303.430	S I	5	3	4.60E-03	1525.637	B I	4	4	5.89E-04	1616.579	Si I	3	3	1.84E-03
1304.370	Si II	2	2	8.71E-02	1525.637	B I	4	6	5.31E-03	1618.4680	Fe II	8	8	3.18E-02
1304.8607	O I	3	3	5.03E-02	1526.707	Si II	2	2	1.32E-01	1619.044	Si I	3	5	3.07E-03
1305.884	S I	1	3	1.11E-01	1532.094	B I	2	2	1.69E-02	1619.527	Si I	3	5	1.48E-02
1306.0317	O I	1	3	5.02E-02	1532.452	B I	4	2	1.69E-02	1620.405	Si I	5	3	1.84E-03
1309.276	Si II	4	2	8.67E-02	1533.431	Si II	4	2	1.31E-01	1621.6856	Fe II	8	6	5.68E-02
1310.194	S I	3	3	4.58E-03	1533.805	B I	2	4	8.46E-03	1622.882	Si I	5	5	5.50E-03
1313.249	S I	1	3	4.57E-03	1534.164	B I	4	4	8.46E-04	1623.366	Si I	5	5	2.66E-02
1316.543	S I	5	7	2.26E-02	1534.164	B I	4	6	7.62E-03	1623.497	Si I	1	3	3.55E-02
1316.615	S I	5	5	4.03E-03	1543.399	B I	2	2	1.50E-02	1625.532	Si I	3	3	8.86E-03
1316.622	S I	5	3	2.69E-04	1543.762	B I	4	2	1.50E-02	1625.705	Si I	1	3	8.51E-02
1323.516	S I	3	5	2.01E-02	1546.424	B I	2	4	1.28E-02	1625.9123	Fe II	6	8	7.01E-03
1323.523	S I	3	3	6.69E-03	1546.789	B I	4	4	1.28E-03	1627.050	Si I	3	1	1.18E-02
1326.642	S I	1	3	2.67E-02	1546.789	B I	4	6	1.14E-02	1627.746	Si I	3	3	2.13E-02
1328.834	C I	1	3	6.08E-02	1548.1950	C IV	2	4	1.90E-01	1629.1596	Fe II	6	6	5.38E-02
1329.085	C I	3	1	2.03E-02	1550.7700	C IV	2	2	9.52E-02	1629.400	Si I	5	3	8.84E-03
1329.100	C I	3	5	2.54E-02	1558.701	B I	2	2	9.92E-03	1629.441	Si I	3	5	6.36E-02
1329.123	C I	3	3	1.52E-02	1559.071	B I	4	2	9.92E-03	1629.9478	Si I	5	7	7.13E-02
1329.577	C I	5	5	4.57E-02	1560.309	C I	1	3	7.14E-02	1631.1285	Fe II	6	4	2.74E-02
1329.600	C I	5	3	1.52E-02	1560.682	C I	3	5	5.36E-02	1631.624	Si I	5	3	8.48E-04
1334.532	C II	2	4	1.27E-01	1560.709	C I	3	3	1.79E-02	1633.328	Si I	5	5	1.27E-02
1335.663	C II	4	4	1.27E-02	1561.340	C I	5	5	1.07E-02	1634.3498	Fe II	4	6	2.63E-02
1335.708	C II	4	6	1.14E-01	1561.367	C I	5	3	7.15E-04	1636.3313	Fe II	4	4	6.14E-02
1341.890	Ca II	2	4	1.47E-03	1561.438	C I	5	7	6.00E-02	1639.4012	Fe II	2	4	8.75E-02
1342.554	Ca II	2	2	7.32E-04	1566.286	B I	2	4	2.06E-02	1649.858	Ca II	2	4	5.79E-04
1362.461	B II	1	3	1.01E+00	1566.302	Si I	1	3	1.85E-02	1651.164	Mg I	1	3	7.77E-04
1378.654	B I	2	4	1.95E-01	1566.661	B I	4	4	2.06E-03	1651.991	Ca II	2	2	2.90E-04
1378.875	B I	2	2	3.90E-01	1566.661	B I	4	6	1.85E-02	1656.267	C I	3	5	6.16E-02
1378.944	B I	4	4	4.88E-01	1567.725	Si I	3	1	6.18E-03	1656.929	C I	1	3	1.48E-01
1379.165	B I	4	2	9.74E-02	1568.196	Si I	3	3	4.63E-03	1657.008	C I	5	5	1.11E-01
1381.5527	S I	5	3	1.27E-04	1568.618	Si I	1	3	3.18E-02	1657.379	C I	3	3	3.69E-02
1385.5103	S I	3	1	1.70E-04	1570.518	Si I	3	3	7.94E-03	1657.907	C I	3	1	4.93E-02
1388.4358	S I	5	5	3.81E-04	1571.796	Si I	5	3	4.62E-03	1658.121	C I	5	3	3.69E-02
1389.1537	S I	3	3	1.26E-04	1573.301	B I	2	2	7.29E-03	1658.312	Mg I	1	3	1.11E-03
1392.5892	S I	1	3	5.06E-04	1573.678	B I	4	2	7.29E-03	1661.478	Be I	1	3	1.56E-02
1393.755	Si IV	2	4	5.24E-01	1573.884	Si I	5	7	2.66E-02	1662.609	B I	2	2	8.29E-03
1396.1130	S I	3	5	2.10E-04	1574.128	Si I	5	3	3.17E-04	1663.030	B I	4	2	8.29E-03
1401.5142	S I	5	3	1.42E-02	1574.847	Si I	3	5	2.37E-02	1666.849	B I	2	4	7.32E-02
1402.770	Si IV	2	2	2.60E-01	1578.477	Si I	5	5	4.74E-03	1667.273	B I	4	4	7.31E-03
1409.3371	S I	3	3	1.41E-02	1584.852	Si I	1	3	7.21E-03	1667.273	B I	4	6	6.58E-02
1412.8732	S I	1	3	1.41E-02	1586.137	Si I	3	1	2.40E-03	1668.429	Mg I	1	3	1.67E-03
1413.16	Al I	2	4	3.98E-02	1586.792	Si I	3	3	1.80E-03	1670.787	Al II	1	3	1.81E+00
1414.24	Al I	2	2	7.97E-02	1586.891	Si I	3	5	1.24E-02	1682.6733	Si I	3	5	4.77E-03
1415.40	Al I	4	4	9.95E-02	1588.731	Si I	3	5	2.99E-03	1683.412	Mg I	1	3	2.71E-03
1416.48	Al I	4	2	1.99E-02	1589.173	Si I	1	3	5.03E-02	1686.8185	Si I	5	5	8.55E-03
1425.0300	S I	5	7	1.21E-01	1590.477	Si I	5	3	1.79E-03	1687.0924	Si I	1	3	1.14E-02
1425.1879	S I	5	5	2.16E-02	1590.577	Si I	5	5	2.23E-02	1689.2902	Si I	3	3	2.85E-03
1425.2191	S I	5	3	1.44E-03	1591.123	Si I	3	3	1.26E-02	1690.789	Si I	3	1	3.79E-03
1426.117	Be I	1	3	3.57E-04	1592.021	Si I	1	3	2.97E-02	1693.2935	Si I	1	3	1.56E-01
1433.2781	S I	3	5	1.07E-01	1592.426	Si I	5	5	5.38E-03	1693.4681	Si I	5	3	2.84E-03
1433.3096	S I	3	3	3.57E-02	1593.977	Si I	3	3	7.43E-03	1695.5074	Si I	3	3	3.88E-02
1436.9672	S I	1	3	1.42E-01	1594.145	Si I	3	1	9.91E-03	1696.207	Si I	3	5	1.17E-01
1473.9943	S I	5	7	3.44E-02	1594.566	Si I	5	7	4.22E-02	1697.941	Si I	5	7	1.31E-01
1474.3785	S I	5	5	6.14E-03	1594.829	Si I	5	3	5.01E-04	1699.7162	Si I	5	3	1.55E-03
1474.5706	S I	5	3	4.09E-04	1594.950	Si I	3	5	3.77E-02	1700.419	Si I	5	5	2.32E-02
1483.0385	S I	3	5	3.05E-02	1597.697	Si I	5	3	7.41E-03	1707.061	Mg I	1	3	4.85E-03
1483.2329	S I	3	3	1.01E-02	1598.674	Si I	5	5	7.51E-03	1747.7937	Mg I	1	3	1.02E-02
1487.1500	S I	1	3	4.05E-02	1600.372	B I	2	4	3.63E-02	1762.8918	Al I	2	4	2.66E-01
1491.765	Be I	1	3	8.44E-07	1600.455	B I	2	2	6.75E-03	1763.661	Si I	1	3	1.21E-02
1519.246	B I	2	4	4.27E-03	1600.763	B I	4	4	3.63E-03	1765.030	Si I	3	1	4.04E-03

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
1765.6323	Al I	2	2	5.31E-01	2148.234	Al I	4	2	5.29E-04	2349.329	Be I	1	3	1.39E+00
1766.063	Si I	3	3	3.03E-03	2151.376	Al I	4	6	3.79E-02	2351.1301	Fe I	9	7	1.04E-04
1766.3542	Si I	3	5	5.05E-03	2151.405	Al I	4	4	4.21E-03	2359.8278	Fe II	4	6	3.77E-02
1766.3813	Al I	4	4	6.63E-01	2151.4717	Ca I	1	3	2.03E-02	2365.5518	Fe II	8	8	4.49E-02
1769.1327	Al I	4	2	1.32E-01	2165.2570	Al I	2	2	8.02E-04	2367.5905	Fe II	10	8	4.25E-03
1770.629	Si I	5	3	3.02E-03	2167.4534	Fe I	9	7	1.50E-01	2367.7750	Al I	2	4	6.48E-02
1770.9225	Si I	5	5	9.06E-03	2169.5069	Al I	2	4	6.47E-02	2370.1800	Fe I	3	3	2.15E-03
1807.3113	S I	5	3	8.45E-02	2170.5235	Al I	4	2	8.00E-04	2372.1546	Fe I	5	5	2.24E-03
1808.013	Si II	2	4	2.56E-03	2171.9780	Fe I	5	7	5.02E-03	2372.7939	Al I	2	2	4.86E-03
1816.928	Si II	4	6	2.29E-03	2174.7522	Al I	4	6	5.81E-02	2373.8466	Al I	4	6	5.82E-02
1817.451	Si II	4	4	2.55E-04	2174.7942	Al I	4	4	6.46E-03	2374.0743	Al I	4	4	6.46E-03
1817.8453	B I	2	2	1.56E-02	2192.5244	Fe I	5	5	8.34E-02	2374.3491	Fe I	7	7	5.56E-03
1818.3495	B I	4	2	1.56E-02	2196.7282	Fe I	3	3	8.57E-02	2374.4612	Fe II	10	10	5.27E-02
1820.3412	S I	3	3	8.39E-02	2199.8694	Al I	2	2	1.30E-03	2375.2435	Fe I	1	3	7.94E-03
1825.8960	B I	2	4	1.75E-01	2201.4114	Fe I	3	5	3.41E-02	2379.1199	Al I	4	2	4.84E-03
1826.2448	S I	1	3	8.36E-02	2201.4136	Ca I	1	3	1.88E-02	2381.4887	Fe II	6	8	9.88E-03
1826.3990	B I	4	6	1.58E-01	2205.3059	Al I	4	2	1.30E-03	2382.5610	Fe I	3	5	6.21E-03
1826.4047	B I	4	4	1.75E-02	2205.3554	Al I	2	4	1.00E-01	2382.7652	Fe II	10	12	3.43E-01
1827.9351	Mg I	1	3	2.83E-02	2208.6665	Si I	1	3	5.22E-02	2383.7884	Fe II	8	6	1.22E-02
1836.5100	Si I	3	5	1.22E-02	2210.7493	Al I	4	6	9.01E-02	2389.3582	Fe II	8	8	9.68E-02
1841.1521	Si I	1	3	2.91E-02	2210.8191	Al I	4	4	1.00E-02	2390.7013	Fe I	5	7	5.38E-03
1841.4489	Si I	5	5	2.18E-02	2211.5814	Si I	3	5	3.90E-02	2396.1497	Fe II	6	4	2.27E-02
1843.7699	Si I	3	3	7.27E-03	2212.4348	Si I	3	3	1.30E-02	2396.3559	Fe II	8	10	2.89E-01
1845.5202	Si I	1	3	2.71E-01	2217.3593	Si I	5	7	4.36E-02	2399.2893	Ca I	1	3	1.54E-03
1846.1116	Si I	3	1	9.67E-03	2218.7476	Si I	5	5	7.79E-03	2399.9728	Fe II	6	6	1.31E-01
1847.4735	Si I	3	5	2.03E-01	2219.6065	Si I	5	3	5.19E-04	2405.1638	Fe II	4	2	3.14E-02
1848.1505	Si I	3	3	6.76E-02	2251.4880	Fe I	9	9	9.24E-04	2405.6186	Fe II	6	8	2.43E-01
1848.7480	Si I	5	3	7.25E-03	2258.7062	Al I	2	2	2.33E-03	2407.3942	Fe II	4	4	1.61E-01
1850.6720	Si I	5	7	2.27E-01	2259.9821	Fe I	7	5	7.00E-04	2411.2533	Fe II	4	6	2.03E-01
1852.4716	Si I	5	5	4.05E-02	2260.2097	Fe I	9	11	5.32E-03	2411.8023	Fe II	2	2	2.20E-01
1853.1522	Si I	5	3	2.70E-03	2264.1647	Al I	2	4	1.33E-01	2414.0450	Fe II	2	4	1.75E-01
1854.716	Al III	2	4	5.75E-01	2264.4378	Al I	4	2	2.32E-03	2426.149	Li I	2	2	3.41E-04
1862.790	Al III	2	2	2.86E-01	2265.7550	Fe I	7	7	1.11E-03	2426.149	Li I	2	4	6.82E-04
1934.5351	Fe I	9	7	1.11E-02	2269.7979	Al I	4	6	1.20E-01	2448.4509	Fe I	9	7	2.32E-03
1937.2684	Fe I	9	7	9.46E-03	2269.9241	Al I	4	4	1.34E-02	2462.9259	Fe I	7	5	7.16E-03
1940.6605	Fe I	7	5	5.19E-03	2272.7718	Fe I	7	9	2.92E-03	2463.3922	Fe I	9	9	5.32E-02
1977.5979	Si I	1	3	5.39E-02	2275.8946	Fe I	3	1	1.60E-03	2473.6195	Fe I	5	3	1.15E-02
1979.2055	Si I	3	1	1.80E-02	2276.1686	Ca I	1	3	1.08E-02	2473.6422	Fe I	7	7	1.19E-01
1980.6184	Si I	3	3	1.34E-02	2276.7289	Fe I	9	7	7.51E-03	2475.780	Li I	2	2	5.29E-04
1983.2328	Si I	3	5	2.24E-02	2280.6408	Fe I	5	7	2.05E-03	2475.780	Li I	2	4	1.05E-03
1986.3640	Si I	5	3	1.34E-02	2284.0088	Fe I	1	3	6.03E-03	2480.5253	Fe I	5	5	1.59E-01
1988.9937	Si I	5	5	4.02E-02	2284.3599	Fe I	3	5	2.01E-03	2484.0209	Fe I	9	11	5.44E-01
2026.4768	Mg I	1	3	1.22E-01	2284.7903	Fe I	7	5	7.16E-03	2484.9373	Fe I	3	3	2.10E-01
2066.436	B III	2	4	2.43E-01	2287.9552	Fe I	5	3	1.05E-02	2488.8936	Fe I	7	9	5.07E-01
2067.893	B III	2	2	1.21E-01	2293.2314	Fe I	7	9	2.98E-03	2490.5036	Fe I	1	3	6.46E-01
2083.442	Ca I	1	3	6.24E-03	2294.5545	Fe I	5	5	8.53E-04	2491.3957	Fe I	5	7	4.48E-01
2084.7848	Fe I	9	7	1.89E-02	2295.1151	Fe I	3	1	9.39E-03	2491.4643	Na I	2	4	3.33E-05
2089.562	B I	2	4	3.51E-02	2297.6344	Fe I	3	3	3.18E-03	2491.4788	Na I	2	2	1.66E-05
2090.214	B I	4	6	3.15E-02	2298.4949	Fe I	7	7	1.13E-02	2491.9065	Fe I	3	5	4.50E-01
2090.228	B I	4	4	3.51E-03	2298.8769	Fe I	9	9	2.43E-02	2497.5243	B I	2	2	8.08E-02
2098.103	Ca I	1	3	9.97E-03	2299.3682	Fe I	3	3	1.27E-03	2498.4762	B I	4	2	8.07E-02
2103.0207	Fe I	7	7	5.82E-03	2299.9282	Fe I	5	5	5.51E-03	2501.8858	Fe I	9	7	4.96E-02
2113.6379	Fe I	1	3	3.80E-02	2300.8501	Fe I	5	7	5.51E-03	2507.6522	Si I	3	5	9.85E-02
2118.986	Al I	2	4	2.01E-02	2302.3924	Fe I	1	3	2.09E-02	2511.5910	Fe I	7	5	8.81E-02
2119.3459	Ca I	1	3	1.54E-02	2304.1334	Fe I	1	3	1.74E-02	2512.8905	Na I	2	4	5.20E-05
2124.030	Al I	4	4	2.01E-03	2304.2898	Fe I	3	5	6.35E-03	2512.9113	Na I	2	2	2.60E-05
2124.03	Al I	4	6	1.81E-02	2309.7092	Fe I	3	5	1.36E-02	2515.0725	Si I	1	3	2.36E-01
2127.972	Al I	2	2	3.69E-04	2313.8155	Fe I	5	7	1.32E-02	2516.8696	Si I	5	5	1.77E-01
2130.335	Al I	2	4	2.87E-02	2321.0705	Fe I	7	9	1.46E-02	2518.8595	Fe I	5	3	1.07E-01
2133.058	Al I	4	2	3.68E-04	2328.1112	Fe II	6	4	3.96E-02	2519.9600	Si I	3	3	5.88E-02
2135.407	Al I	4	6	2.58E-02	2333.5156	Fe II	8	6	8.15E-02	2523.6083	Fe I	9	9	2.79E-01
2135.433	Al I	4	4	2.86E-03	2338.7248	Fe II	4	4	8.87E-02	2524.8669	Si I	3	1	7.83E-02
2139.2667	Fe I	9	7	1.50E-03	2344.2139	Fe II	10	8	1.26E-01	2525.0517	Fe I	3	1	1.08E-01
2143.075	Al I	2	2	5.31E-04	2345.0011	Fe II	2	4	1.26E-01	2528.1946	Fe I	7	7	1.80E-01
2146.230	Al I	2	4	4.22E-02	2349.0223	Fe II	6	6	7.71E-02	2529.2682	Si I	5	3	5.86E-02

**Table 2.** Finding list of lines

$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$	$\lambda$ , Å	Ion	$g_i$	$g_k$	$f_{ik}$
2529.8954	Fe I	5	5	9.35E-02	3021.9526	Fe I	7	7	6.24E-02					
2530.5960	Fe I	3	3	3.69E-02	3026.7235	Fe I	1	3	1.45E-01					
2536.3689	Fe I	1	3	2.82E-01	3038.2727	Fe I	3	5	6.65E-02					
2541.7352	Fe I	3	5	1.49E-01	3048.4911	Fe I	5	7	5.51E-02					
2544.604	Na I	2	4	8.85E-05	3059.9750	Fe I	7	9	2.92E-02					
2544.636	Na I	2	2	4.42E-05	3083.0462	Al I	2	4	1.62E-01					
2546.7427	Fe I	5	7	9.14E-02	3093.6062	Al I	4	6	1.45E-01					
2550.3784	Fe I	7	9	4.52E-02	3093.7347	Al I	4	4	1.61E-02					
2563.070	Li I	2	2	8.59E-04	3131.327	Be II	2	4	3.33E-01					
2563.070	Li I	2	4	1.71E-03	3131.973	Be II	2	2	1.66E-01					
2586.6500	Fe II	10	8	5.48E-02	3233.5637	Li I	2	2	1.61E-03					
2594.644	Na I	2	4	1.70E-04	3233.5637	Li I	2	4	3.20E-03					
2594.695	Na I	2	2	8.52E-05	3303.319	Na I	2	4	9.01E-03					
2599.1465	Fe II	8	6	9.48E-02	3303.929	Na I	2	2	4.50E-03					
2600.1729	Fe II	10	10	2.40E-01	3441.5918	Fe I	9	7	2.38E-02					
2607.8664	Fe II	6	4	1.18E-01	3441.9748	Fe I	7	5	1.57E-02					
2612.6542	Fe II	8	8	1.31E-01	3444.8634	Fe I	5	3	8.53E-03					
2614.6051	Fe II	4	2	1.14E-01	3466.8532	Fe I	3	3	2.15E-02					
2618.3991	Fe II	6	6	5.02E-02	3476.4453	Fe I	5	5	1.78E-02					
2621.1912	Fe II	4	4	3.22E-03	3477.6972	Fe I	1	3	3.09E-02					
2622.4518	Fe II	2	2	6.52E-02	3491.5727	Fe I	7	7	1.11E-02					
2626.4511	Fe II	8	10	6.75E-02	3498.8414	Fe I	3	5	9.39E-03					
2629.0777	Fe II	2	4	2.28E-01	3527.0488	Fe I	5	7	2.96E-03					
2631.8321	Fe II	4	6	1.75E-01	3650.3426	Fe I	9	7	6.99E-05					
2632.1081	Fe II	6	8	1.25E-01	3680.9611	Fe I	9	9	2.80E-03					
2653.2654	Al I	2	2	1.47E-02	3684.1032	Fe I	7	5	4.12E-04					
2661.1778	Al I	4	2	1.46E-02	3706.6201	Fe I	7	7	6.62E-03					
2681.137	Na I	2	4	4.01E-04	3708.8770	Fe I	5	3	8.93E-04					
2681.230	Na I	2	2	2.01E-04	3720.9928	Fe I	9	11	4.12E-02					
2719.8329	Fe I	9	7	1.19E-01	3723.6218	Fe I	5	5	1.03E-02					
2721.7082	Fe I	7	5	8.41E-02	3734.3790	Fe I	3	3	1.30E-02					
2722.4504	Ca I	1	3	2.01E-02	3738.1941	Fe I	7	9	3.81E-02					
2724.3840	Fe I	5	3	4.28E-02	3746.6259	Fe I	5	7	3.39E-02					
2738.1192	Fe I	3	3	9.39E-02	3746.9642	Fe I	1	3	4.62E-02					
2741.995	Li I	2	2	1.43E-03	3749.3276	Fe I	3	5	3.21E-02					
2741.995	Li I	2	4	2.88E-03	3825.5288	Fe I	9	7	4.83E-03					
2743.2165	Fe I	5	5	7.10E-02	3857.4650	Fe I	7	5	7.39E-03					
2744.8790	Fe I	1	3	1.20E-01	3861.0058	Fe I	9	9	2.17E-02					
2750.9536	Fe I	7	7	4.41E-02	3879.6724	Fe I	5	3	8.93E-03					
2757.1427	Fe I	3	5	3.82E-02	3887.3834	Fe I	7	7	1.20E-02					
2772.9285	Fe I	5	7	6.65E-03	3896.7600	Fe I	3	1	7.13E-03					
2796.352	Mg II	2	4	6.29E-01	3900.8122	Fe I	5	5	5.89E-03					
2803.531	Mg II	2	2	3.14E-01	3907.5861	Fe I	3	3	1.90E-03					
2852.9642	Mg I	1	3	1.73E+00	3921.3679	Fe I	1	3	1.79E-02					
2853.649	Na I	2	4	1.33E-03	3924.0224	Fe I	7	9	3.19E-03					
2853.850	Na I	2	2	6.64E-04	3929.0319	Fe I	3	5	8.57E-03					
2913.0102	Fe I	9	7	2.60E-03	3931.4095	Fe I	5	7	5.14E-03					
2929.8641	Fe I	7	5	4.73E-03	3934.777	Ca II	2	4	6.50E-01					
2937.7623	Fe I	9	9	1.80E-02	3945.1224	Al I	2	2	1.23E-01					
2942.2029	Fe I	5	3	3.99E-03	3962.6410	Al I	4	2	1.23E-01					
2948.7376	Fe I	7	7	2.37E-02	3969.591	Ca II	2	2	3.22E-01					
2954.8032	Fe I	5	5	2.46E-02	4227.9179	Ca I	1	3	1.94E+00					
2958.2286	Fe I	3	3	2.31E-02	5891.5826	Na I	2	4	6.70E-01					
2966.1205	Fe I	1	3	4.57E-02	5897.5575	Na I	2	2	3.35E-01					
2967.7646	Fe I	9	11	4.42E-02	6709.6127	Li I	2	4	4.99E-01					
2970.9668	Fe I	3	5	2.47E-02	6709.7639	Li I	2	2	2.49E-01					
2974.0004	Fe I	5	7	2.52E-02										
2974.1032	Fe I	7	9	3.13E-02										
2984.4402	Fe I	9	7	2.92E-02										
2995.3000	Fe I	7	5	4.22E-02										
3001.8226	Fe I	5	3	5.14E-02										
3009.0148	Fe I	3	1	4.82E-02										
3018.5063	Fe I	3	3	9.39E-03										
3021.3705	Fe I	5	5	2.64E-02										
3021.5187	Fe I	9	9	1.04E-01										

Table A. Sources of Energy Level Values

	H	He	Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	S	Ar	Ca	Fe	
I	9	17	18	20	23	27	29	33	40	97,98	54	55,56	57,58	60	62,63	99	82	12	I
II		9	19	21	24	27	30	34	41	47	54	55,56	57,58	60	62,63	65,66	82	100	II
III			9	22	25	27	29	35	42	48	54	55,56	57,58	60	62,63	43,65,67	82	82,84	III
IV				9	26	27	31	36	43	43,49	54	55,56	57,58	60	62,63	68	82,83	82	IV
V					9	27,28	31	37	43	50	54	55,56	57,58	60	62,63	69,70	82	82	V
VI						9	32	38	44	50	54	55,56	57,58	60	62,63	69,71	82	82	VI
VII							9	39	43,45	51,52	54	55,56	57,58	60	62,63	69	82	82	VII
VIII								9	46	52	54	55,56	57,58	60	62,64	69,96	82	82,85	VIII
IX									9	53	54	55,56	57,58	60	62,63	72	82	82,85	IX
X										9	54	55,56	57,59	60	62,63	73,74	82	82,85	X
XI											9	55,56	57,58	60,61	62,63	74,75	82	82,85	XI
XII												9	57,58	60	62,63	74,76,77	82	82,85	XII
XIII													9	60	59,62,63	74,76-79	82	82,85	XIII
XIV														9	62,63	74,78	82	82,85	XIV
XV															62,63	59,80,81	82	82,85	XV
XVI															9	81	82	82,85	XVI
XVII																53	82	82,85	XVII
XVIII																9	82	82,85	XVIII
XIX																	82	82,85	XIX
XX																	9	82,85	XX
XXI																		82,85	XXI
XXII																		82,85	XXII
XXIII																		82,85	XXIII
XXIV																		82,85	XXIV
XXV																		82,85	XXV
XXVI																		9	XXVI

Table B. References for the Opacity Project Data

H-like	Seaton, to be published
He-like	Fernley, Taylor, & Seaton <sup>86</sup>
Li-like	Peach, Saraph, & Seaton <sup>87</sup>
Be-like	Tully, Seaton, & Berrington <sup>88</sup>
B I	Berrington & Hibbert, to be published
B-like ions	Fernley, Hibbert, Kingston, & Seaton, to be published
C-like	Luo & Pradhan <sup>89</sup>
N-like	Burke & Lennon, to be published
O-like, F-like	Butler & Zeippen, to be published
Ne-like	Hibbert & Scott <sup>90</sup>
Na-like	Taylor, to be published
Mg-like	Butler, Mendoza, & Zeippen <sup>91</sup>
Al-like	Mendoza, Eissner, Le Dourneuf, & Zeippen <sup>92</sup>
Si-like	Nahar & Pradhan <sup>93</sup>
P-like, S-like, Cl-like	Butler, Mendoza & Zeippen, to be published
Ar I, Ca I–Ca III	Berrington, Hibbert & Scott, to be published
Fe III, Fe IV	Sawey & Berrington <sup>94</sup>
Fe V	Butler, to be published
Fe VI, Fe IX–Fe XIII	Mendoza, to be published
Fe VII, Fe VIII	Saraph, Storey, & Taylor <sup>95</sup>

ATOMIC DATA FOR PERMITTED RESONANCE LINES OF ATOMS AND IONS  
FROM H TO Si, AND S, Ar, Ca AND Fe

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We list vacuum wavelengths, energy levels, statistical weights, transition probabilities and oscillator strengths for permitted resonance spectral lines of all ions of 18 astrophysically important elements (H through Si, S, Ar, Ca, Fe). Using a compilation of experimental energy levels, we derived accurate wavelengths for 5599 lines of 1828 ground-term multiplets which have  $gf$ -values calculated in the Opacity Project. We recalculated the Opacity Project multiplet  $gf$ -values to oscillator strengths and transition probabilities of individual lines. For completeness, we added 372 resonance lines of Ne I, Ar I, Fe I and Fe II ions which are not covered by the Opacity Project. Intercombination and forbidden lines are not included in the present compilation.

## INTRODUCTION

Recently, a large international collaboration known as the Opacity Project (hereafter OP; Seaton et al.<sup>1</sup>) produced a complete set of accurate atomic data for all stages of ionization of astrophysically important elements:  $1 \leq Z \leq 14$  and  $Z = 16, 18, 20, 26$ , where  $Z$  is the atomic number. In particular, the OP data include oscillator strengths for all optically allowed transitions between states with  $n \leq 10$  and  $l \leq 4$ , where  $n$  and  $l$  are the active-electron principal and orbital quantum numbers respectively. The OP data do not include intercombination and forbidden transitions. The OP calculations are based on high level methods such as the R-matrix method (Burke, Hibbert, and Robb<sup>2</sup>) and the new asymptotic techniques developed by Seaton<sup>3</sup>. Extensive comparisons of the OP data with experiment and theory (Seaton et al.<sup>1</sup>, Mendoza<sup>4</sup>, Verner, Barthel, and Tytler<sup>5</sup>, Verner and Yakovlev<sup>6</sup>) have confirmed the high accuracy of the OP calculations. The OP data are available through the TOPbase database (Cunto et al.<sup>7</sup>).

However, the OP transition probabilities and oscillator strengths cannot be directly used for spectroscopic applications because the OP gives all the data for multiplets only, not for individual lines. Moreover, the OP theoretical multiplet wavelengths are accurate to a few angstroms, which is not good enough for spectroscopy.

In an earlier paper (Verner et al.<sup>5</sup>) we assigned accurate experimental wavelengths to 1086 OP lines from the ground (zero energy) level at wavelengths greater than 228 Å. In the present paper, we extend this analysis for all the OP permitted resonance lines, i.e. lines connecting the ground level and excited fine-structure levels of the ground term to excited levels via optically allowed transitions (transitions between levels of opposite parity with  $|\Delta L| \leq 1$ ,  $|\Delta S| = 0$ ,  $|\Delta J| \leq 1$ , where  $L$  is the orbital,  $S$  the spin, and  $J$  the total angular momentum quantum number).

We retrieved from the TOPbase 0.7 database the  $gf$ -values for all multiplets which involve the ground term. These 6018 resonance multiplets include 23505 lines. In the OP calculations, relativistic effects are neglected, and  $LS$ -coupling is assumed throughout. We calculated the  $f$ -values of all individual lines in multiplets based on  $LS$ -coupling rules (Russell<sup>8</sup>). To assign accurate wavelengths to these lines, we made a compilation of experimental energy levels (complete to October 1995; references are given in Table A). Vacuum wavelengths calculated from experimental energy levels should be more reliable than measurements of individual resonance lines, because the experimental energy levels are based on the analysis of the whole experimental spectrum in each case. The number of digits we keep in the tabulated wavelengths is determined by accuracy of the experimental energy levels quoted in the corresponding papers. For some hydrogenic ions, Erikson<sup>9</sup> lists energy levels for various isotopes. In such cases, we used the values of energy levels of the most naturally abundant isotopes.

By this method, we assign accurate wavelengths to 5599 optically allowed  $LS$ -type lines in 1828 multiplets (references to the OP data are given in Table B). Beyond that, some gaps in the data still remain. Firstly, atomic data for Fe I and Fe II ions are not included in the TOPbase database. In the framework of the OP extension known as the Iron Project (Hummer et al.<sup>10</sup>), Nahar<sup>11</sup> calculated transition probabilities for 21,589 allowed transitions of Fe II which have experimentally determined wavelengths. We included in our compilation all resonance lines of Fe II from Nahar's paper. Multiplet tables for Fe I, which include 9759 lines, have been recently published by Nave et al.<sup>12</sup>. For our list, we selected the resonance lines of Fe I which have  $gf$ -values in the Nave et al. tables, and added the complete resonance multiplets of Fe I from the compilation by Morton<sup>13</sup>. Secondly, the OP calculations are based on  $LS$ -coupling, and only allowed  $LS$ -type lines are covered by our procedure. In particular, no data for lines of Ne I or Ar I can be obtained from the Opacity Project. To fill this gap, we included the resonance non- $LS$ -type lines of Ne I and Ar I from the compilation by Verner et al.<sup>5</sup>.

In the whole, we list accurate wavelengths, energy levels, statistical weights, transition probabilities and oscillator strengths for 5971 resonance lines. Intercombination (i.e.  $|\Delta S| > 1$ ) and forbidden lines are not included in our compilation.

We calculated also the multiplet energy levels by averaging the weighted energy level values. The multiplet averaged wavelengths are calculated by use of the averaged energy levels. For multiplets where not all levels of the upper term are known, the averaged values are obtained from the available levels. For these cases, the averaged multiplet upper level and wavelength are not the "true" averaged values.



We subsequently used accurate wavelengths to improve the  $f$ -values calculated by the OP. The OP calculations give line strength  $S$  and transition energy  $E$ , where  $S$  is given by an integral over the atomic wave functions and does not involve  $E$ . Then  $gf$ -values are calculated from  $S$  and  $E$  since  $gf = \text{const} \times S \times E$  (or  $gf = \text{const} \times S/\lambda$ ). The OP used their theoretical values of  $E$  to calculate  $gf$ -values. To improve the  $gf$ -values we now use the more accurate experimental wavelengths instead of the theoretical  $E$  values. We recalculated the OP  $f$ -values as

$$f_{\text{improved}} = f_{\text{OP}} \times (\lambda_{\text{OP}}/\lambda_{\text{exp}}). \quad (1)$$

Transition probabilities are calculated from oscillator strengths in accordance with the standard formula:

$$A_{ki} = 6.670 \times 10^{15} g_i f_{ik} / (g_k \lambda^2) \text{ s}^{-1}, \quad (2)$$

where  $\lambda$  is in Å.

To estimate the accuracy of the calculated oscillator strengths and transition probabilities, we have compared the improved OP  $f$ -values for iron ions with the  $f$ -values taken from the National Institute of Standards and Technology (NIST) evaluated compilation of atomic transition probabilities (Fuhr, Martin, and Wiese<sup>14</sup>). Figure 1 shows this comparison for all the NIST resonance iron lines with estimated accuracy better than 10%. All these lines are strong transitions of the highly ionized (Fe XV and higher) ions. The agreement is remarkably good. The rms deviation of the improved OP  $f$ -values from the NIST  $f$ -values is 8.4%, and no values deviate by more than 15%. Note that all the NIST values are obtained by relativistic calculations, and relativistic effects should be more important for iron than for other OP elements. Generally, for the strong lines which can be classified as  $LS$ -type allowed transitions, the improved OP data are fairly accurate. The obtained oscillator strengths and transition probabilities are less accurate for weaker lines and for lines that are not pure  $LS$ -type, in particular, for high  $l$  ( $p-d$  and higher) transitions. We do not list here branching ratios which indicate the purity of  $LS$  coupling, since such data are available for a smaller portion of the lines only. However, special caution should be taken when using the listed oscillator strengths and transition probabilities for the lines of neutrals and first ions of the third row elements (Mg, Al, Si, S, Ar), especially for the weak lines.

The main incompleteness of our compilation comes from the fact that all lines which cannot be classified as allowed  $LS$ -type lines are not covered here (except Ne I and Ar I lines). However, the present compilation is accurate and complete for the permitted  $LS$ -type lines of all ionization states of 18 elements. This compilation is supplementary to the compilation of the resonance absorption lines above 912 Å by Morton<sup>13</sup>, the compilation of ground level absorption lines above 228 Å by Verner et al.<sup>5</sup>, and the NIST evaluated compilations of the atomic transition probabilities by Martin et al.<sup>15</sup>, Fuhr et al.<sup>14</sup>, Wiese et al.<sup>16</sup>).

Tables I and II in electronic form are available through anonymous ftp at [asta.pa.uky.edu](http://asta.pa.uky.edu), directory `dima/lines`, or through the World Wide Web page “Atomic Data for Astrophysics”, <http://www.pa.uky.edu/~verner/atom.html>.

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## EXPLANATION OF TABLES

**Table I. Wavelengths and Oscillator Strengths of Permitted Resonance Absorption Lines**

The data are sorted by element from H to Fe, ionization state (starting with neutral state), multiplet (starting with the largest averaged multiplet wavelength), and wavelength (decreasing wavelength within the multiplet). Theoretical energy levels are given in square brackets. The averaged multiplet data values of the listed levels and wavelengths are given in *italic*.

Species	Atom or ion
Transition	Electronic configurations of lower (ground term) and upper levels. If an upper level has an uncertain identification in the Opacity Project (OP), the relevant configuration is marked by semicolon (:) If the order of levels within a spectroscopic series in the OP does not coincide with the order of levels within the spectroscopic series stated in the corresponding source of experimental energy levels, the OP identifications are used, and the relevant configurations are marked by asterisk (*)
Multiplet	Terms of lower and upper levels
$\lambda$	Vacuum wavelength in Å
$E_i, E_k$	Energies of lower and upper levels in $\text{cm}^{-1}$ If an upper level energy has a question mark in the source of experimental energy levels, we also indicate it and the corresponding wavelength by question mark (?) If experimental spectroscopy of the upper term is not complete, and the experimental energy of an upper level is unknown, we leave the upper level energy and the corresponding wavelength entries blank
$g_i, g_k$	Statistical weights of lower and upper levels
$A_{ki}$	Atomic transition probability in $\text{s}^{-1}$
$f_{ik}$	Absorption oscillator strength

**Table II. Finding List of Lines**

The lines are sorted by increasing wavelength.

$\lambda$	Vacuum wavelength in Å
Species	Atom or ion
$g_i, g_k$	Statistical weights of lower and upper levels
$f_{ik}$	Absorption oscillator strength

## FIGURE CAPTION

Figure 1. Improved Opacity Project oscillator strengths (Eq. 1) vs. the oscillator strengths from Fuhr et al.<sup>14</sup> for iron lines which are classified by Fuhr et al.<sup>14</sup> as accurate to within 10%.